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ABSTRACT

This document provides a detailed design for the data portion of the Mississippi Library Commission (MLC) public library network. The data network is based on Frame Relay technology, and would provide more functionality at a higher speed than a previously considered dial-in network could. The document is divided into 16 sections: (1) Introduction; (2) Current Environment; (3) Desired Functionality; (4) Network Overview/Cost Summary; (5) Hardware Requirements; (6) Software Requirements; (7) Network Requirements at MLC; (8) Network Topology Options; (9) Equipment at the Endpoints; (10) Personnel Issues; (11) Training Issues; (12) Network Deployment Issues; (13) Network Support Issues; (14) Security and Firewalls; (15) Next Steps; and (16) Attachments. Attachments include a library-by-library breakdown of the proposed network used to determine overall estimated costs for telecommunications lines and library equipment; public and private device IP (Internet Protocol) and WAN (wide area network) addressing charts; router configurations; MLC computer survey and results; diagrams and charts of network connectivity options with cost information; and MLC CD-ROM tower specifications. (SWC)

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Statewide Data Networking Plan For Public Libraries

Submitted To:

Mississippi Library Commission

MISSISSIPPI
LIBRARY COMMISSION

Final Release: Revised June 10, 1996

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Mississippi Library Commission
Data Network Specifications

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Mississippi Library Commission
Data Network Specifications

1. Introduction

This document and the attached exhibits have been prepared by Evans Associates, Consultants in Communications Technology, representing the consulting team of Evans Associates and The Aegis Group. This document is provided to the Mississippi Library Commission (MLC) in partial fulfillment of our contract to provide telecommunications consulting services to MLC.

In late 1994, the MLC undertook a telecommunications feasibility study with the State Board for Community & Junior Colleges (SBCJC) and the Mississippi Association for Community & Junior Colleges (MACJC). This study concluded that "a significant need and justification (exists) for expanded local and statewide telecommunications initiatives in the State of Mississippi". Based on this need, a combined MLC/college video/data network was designed, based on expansion of the existing Community College Network (CCN). This network was to feature dial-in access by the public libraries, with community college campuses serving as dial-in locations. The dial-in network was seen as a "Phase I" solution which could satisfy the needs of the libraries until the infrastructure for a permanent, dedicated network based on emerging Frame Relay technology could be built by the providers. As part of the design, a network implementation budget of $29.9 million was detailed; of this amount, $1.975 million was budgeted specifically for creating MLC's portion of the data and video network. Based on this budget, the Mississippi legislature proposed and enacted a bill which authorizes the issuance of state bonds to procure the funds for building the network.

Since the completion of the report, two factors have fundamentally changed the direction of MLC's efforts. First and foremost, Mississippi's telecommunications vendors (primarily Bell South) have implemented statewide Frame Relay service much more quickly than they had originally indicated, and have offered extremely favorable pricing to state government agencies. Secondly, MLC has elected to delay participation in the video portion of the network until new MLC facilities are completed and occupied, probably in 1998. As a result of these factors, it is now possible for MLC to deploy the "Phase II" data network directly, without creating the "Phase I" network first, and without requiring additional funding. The "Phase II" data network, based on Frame Relay technology, will provide more functionality at a higher speed to the public libraries than the Phase I dial-in network could have offered.

Towards these ends, the following document represents a detailed design for the data portion of the MLC public library network. Although this network is being designed and installed using the funds available from the bonds, it is important to consider that the ongoing cost of the network will need to be borne by the libraries. Therefore, careful consideration has been given to minimize these ongoing costs.

2. Current Environment

The Mission Statement of the Library Commission reads as follows:

Mississippi Library Commission

Data Network Specifications

The Mississippi Library Commission assumes a leadership role to fulfill the information needs of the residents of Mississippi by advocating the development of efficient, effective public library systems and by encouraging cooperation among all types of libraries.

The Commission will continue to take a proactive position to improve the quality of library services by utilizing effective management practices including planning, education and communication. Consistent with state and federal mandates, the Commission commits available resources to provide appropriate services by fairly and consistently applying policies that assure accountability to funding authorities, service providers, supporters and users.

The Mississippi Library Commission (MLC), established in 1926, is an independent state agency created to serve the citizens of the state through their public libraries as well as members of the legislature, state officials, state agencies and state employees directly. MLC also serves state residents with visual or physical handicaps which prevent the reading of conventional print.

One focus of the Mississippi Library Commission is public libraries with cooperative activities with school, academic, and special libraries. There are 45 public library systems with over half (1.2 million) of Mississippi's citizens registered users.

MLC is the primary resource library for Mississippi public libraries. To fulfill this role, the agency has a general collection of 200,000 books, subscriptions to 500 periodicals, 50,000 state and federal documents, over 100 CD-ROMs, and a collection of 5,000 audiovisual titles.

The Commission's assistance to libraries takes many forms: consulting, grants, reference, summer reading club, programming, continuing education, and other services.

The MLC currently uses an IBM RS/6000 server running the Dynix library automation package. This package catalogs and provides access to the MLC's own holdings of library materials. The RS/6000 has dial-in capability using the Dynix "DialPAC" feature. MLC also has two local area networks (LANs) in their building; each runs Novell 4.1 network software and each is connected via Ethernet to the RS/6000. TCP/IP functionality on the Novell LANs is provided by Novell's LAN Workplace product.

3. Desired Functionality

The MLC requires that the data network being created offer the following functionality to MLC employees and to the state's public libraries:

- Full Internet access, including access to the World Wide Web and Internet e-mail.
- On-line in-state access to the Dynix system (and, by extension, MLC's holdings) and to a proposed MLC CD tower by public libraries. Access from Internet to the CD tower is not desired.

- Capability for access to such services as OCLC First Search program.
- Capability for on-line access to the Mississippi Union Catalog (MUC), currently maintained on CD by MLC and updated annually.
- The MLC's holdings (and the MUC as well) will be made available for browse and search to the World Wide Web community.
- Capability for users to fill out and submit on-line Inter-Library Loan (ILL) requests.
- A bulletin board (for event schedules, job postings, etc) for use by Mississippi librarians.
- Capability for on-line access to other state holdings, such as the universities' library catalogs (should the universities choose to make such holdings available).
- Capability to host multiple sets of World Wide Web pages/sites.
- Capability for users to directly download catalog information from MLC or the MUC into ILL requests or their own computerized catalog.

This network will be created by establishing the network server(s) at the MLC's offices in Jackson, and then making those services available to public libraries throughout the state. For Internet access, libraries will pass their traffic to the state's designated Internet Service Provider (ISP) through the MLC connection. The Internet portion of this design has been decided on by the State and MLC. The specific topology of the "downstream" network (i.e. between MLC and the public libraries) will be detailed in Section 8. However, it is important to note here that the MLC will be providing PC computers to the public libraries for use in accessing the network; these PCs will be pre-configured with the necessary hardware and software. Therefore, the hardware and software used at the MLC central site must be chosen and implemented with the thought that compatible software will be going to the public libraries, most of which are staffed by people of limited computer expertise.

It is understood that realizing all these goals will not be the complete responsibility of any one vendor. The creation of this network will require the coordinated contributions of a number of hardware, software, agency, and service providers. The recommendations included in this document are consistent with the objective of open systems development.

4. Network Overview/Cost Summary

This section will provide an overview of the topology and costs of the proposed network. Subsequent sections of this document will provide the additional detail and cost breakdowns necessary to implement the network.

As explained in Section 1, this network will be based on Frame Relay technology. Figure 1 below shows the locations of each Bell South "cloud" hub, and the approximate number of public libraries reachable by that cloud; additional detail on the MLC central site is given in Figure 7:

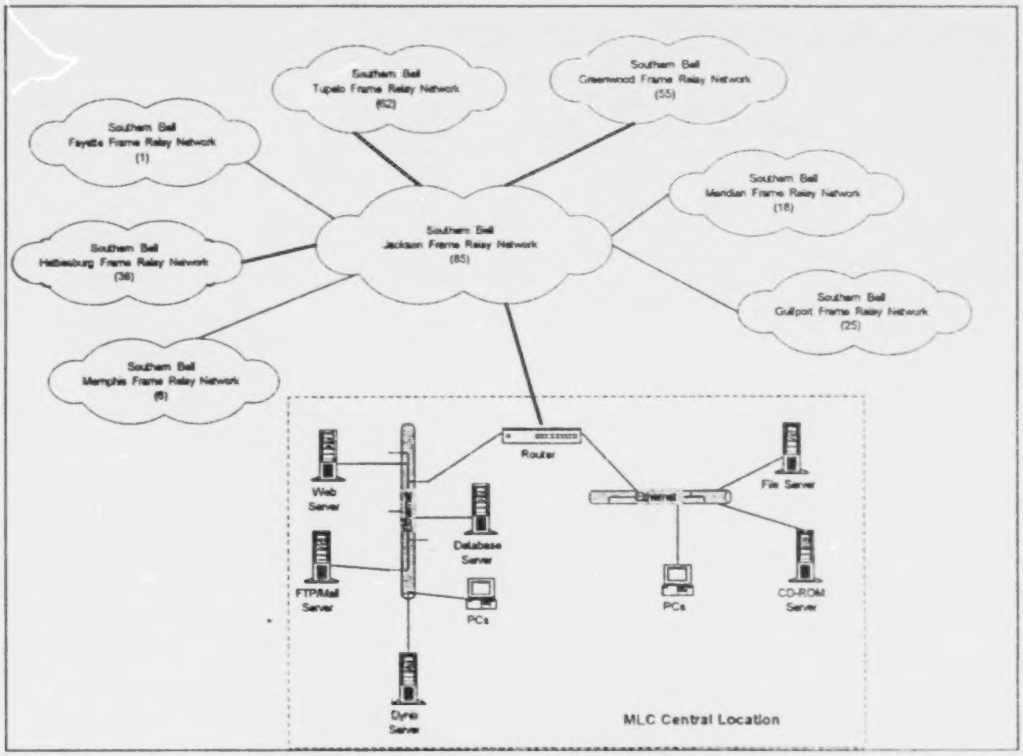
Southern Bell
Tupelo Frame Relay Network
(62)
Southern Bell
Greenwood Frame Relay Network
(55)
Southern Bell
Fayette Frame Relay Network
(1)
Southern Bell
Meridian Frame Relay Network
(18)
Southern Bell
Jackson Frame Relay Network
(85)
Southern Bell
Hattiesburg Frame Relay Network
(36)
Southern Bell
Gulfport Frame Relay Network
(25)
Southern Bell
Memphis Frame Relay Network
(6)
Router
Web Server
File Server
Ethernet
Database Server
FTP/Mail Server
PCs
PCs
CD-ROM Server
Dynix Server
MLC Central Location

Figure 1: Basic Network Architecture

Each headquarters (HQ) library acts as a hub for its own branches that use dedicated (leased) lines for network access (smaller libraries will use dial-up access, as explained in Section 8). Private Virtual Circuits (PVCs) will be set up from the HQ to each branch through the local cloud using 56 kbs lines. An additional PVC will connect each branch with the state's Internet Service Provider (ISP). The HQs are connected to the cloud through a 56 kbs line or a T-1 line, depending on traffic estimates. A router will be placed at each HQ and dedicated line access branch.

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At the MLC, several new servers will be added to the MLC LAN in order to service the requests which come in via the network from the Internet and from state public libraries. The specification for all of this equipment is provided in this document. These new servers include:

- A Web server to process the World Wide Web requests from public libraries and the Internet;
- An FTP/Mail server to process file transfers and electronic mail;
- A Spectrum computer (not shown in Figure 1) for MLC Help Desk network monitoring;
- A server to drive the proposed CD-ROM tower;
- A database server to allow for dynamic web-page access to other MLC data (to be added to the network in a later phase; see section 12).

Figure 2 gives a summary of the budget for this network. The "Detail Reference" column indicates where in this document further detail may be found regarding the item on each line.

Item	Install Cost	Recurring Cost/Mo	Bond $ Budget	Detail Reference
MLC/Network Central Costs:				
MLC Hardware	$105,800.00	$1,058.00		Figure 5
MLC Software	$83,500.00	$475.00		Figure 5
MLC Network Equip	$27,146.50	$401.00		Figure 5
MLC LTE Project Mgr	$25,000.00			Section 12
Subtotal	$241,446.50	$1,934.00	$100,000.00	
Telecommunications Costs:				
Network Equipment At HQs/Br	$609,025.50	$4,135.00		Figure 15, Page 6
Dedicated Lines	$23,930.00	$25,289.75		Figure 15, Page 6
Dialup Lines	$8,370.00	$6,772.50		Figure 15, Page 6
Subtotal	$641,325.50	$38,131.25	$1,116,500.00	
Computer Equip At HQs/Br	$750,000.00		$750,000.00	Section 9
Contingency Fund	$333,728.00			Section 4
TOTAL NETWORK COST	**$1,966,500.00**	**$40,065.25**	**$1,966,500.00**	

Figure 2: Network Cost Summary

The cost summary (Figure 2 above) has been constructed to account for all of the money allocated to this project via the state bonds. The difference between the calculated cost of the proposed network and the bond dollars budget is contained in the "Contingency Fund" entry in column one.

These cost projections cover *all known cost areas* involved in the creation and operation of this network **with the exception of the following:**

1. Firewall costs (see Section 12);
2. Costs to attach library systems' LANs to network (see Section 9);
3. Internet access charges (not known at this time);
4. CD-ROM tower/server (to be financed outside of this budget)
5. Class C license registration fees, if any (see Section 7)

5. Hardware Requirements

Web/Database Server Discussion

The sizing and deployment of server hardware (and software) is dependent on the strategy chosen to provide access to information. Two strategies are available:

i) Exclusively via Web Server: Under this strategy all information that needs to be made accessible has to be created and organized into Web pages with appropriate links for navigational purposes. Web pages on the server are static and any change in the content would require updating, reformatting, and refreshing of the Web server documents. This process can be time consuming and is dependent on the type and the amount of information on the Web Server and the frequency of changes made to the content. See Figure 3.

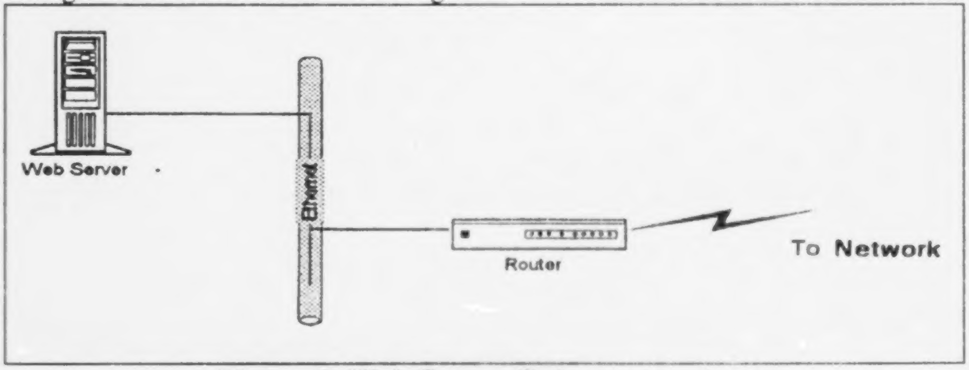

Figure 3: Web Server Only

ii) Use of Web and Database Server: This approach allows creating and storage of static as well as dynamic Web pages. Depending on the information type requested, HTML pages can be retrieved from the Web server or created "on the fly" from data retrieved in real time from a database on the Database server (see Figure 4). Additionally, this strategy allows for the use of form capability available in browsers. Forms capability could:

- Allow MLC to provide search and retrieval capability where search parameters can be entered by users with results retrieved from the database sent as Web pages.

- Allow MLC to create data entry forms that libraries can use to fill out requests (e.g. inter-library loan, substitute for fax, etc.) and transmit. Information from the forms can be stored in the database and further automated processing can be performed with the ability to provide various types of reporting.

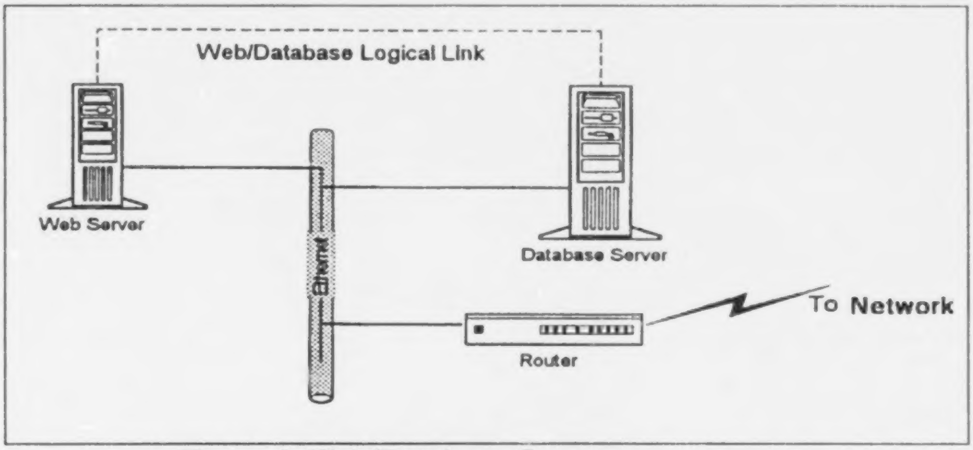

Figure 4: Web/Database Servers

A Web server exclusive strategy would suggest a hardware configuration with large storage capacity on the Web server, whereas using a combination Web and Database server strategy, the storage capacity is split between the Web server and the Database server.

The Web/Database combination strategy provides significant flexibility and is therefore highly recommended. However, it is felt that the initial implementation of the network can be done with only the Web server; the Database server should be added later in the implementation cycle (see Section 12).

Detailed Hardware Specifications

The following specifications are provided for the needed network hardware. Refer to Figure 1, "Basic Network Architecture".

- An Internet World Wide Web server (which also includes DNS service): single-processor Pentium PC, at least 1.5 GB of hard disk space, 32 MB memory, CD-ROM drive, and DAT tape unit.

- A computer which functions as the MLC's database network server will be required. This computer will be the unit which will house and allow access to the databases not already present on the Dynix system, and should be equipped with:

    - A Pentium processor, with a clock speed of at least 166 MHz. The computer should have the capability for the addition of multiple processors in the future, to a total of at least four. Sun or other processors could be substituted for the Pentium, with no loss in functionality or compatibility. However, it is felt that Pentium/Windows NT platforms are lower in price, provide greater choice of third-party software, and are generally easier to support. Additionally, there is a greater availability of Pentium/NT support skills in the workforce. If these issues are adequately addressed by MLC, then other platforms for both the database server and the Web server may be considered.

    - A minimum of 64 MB of memory for each processor.

    - A media retrieval storage device which features multiple, mirrored plug-in disk drives of at least 2 GB each.

    - A DAT-format tape backup unit of at least 8 GB capacity.

- An FTP/electronic mail server: same specifications as the Web server above.

  Note: Separate servers for databases, Web activities, and FTP/mail have been recommended as outlined above. Although it is technically possible to run all these applications on a single server, lack of specific performance and traffic volume data for the projected network makes this inadvisable. Installing separate servers allows maximum flexibility and room for expansion, and prevents a potential bottleneck in the network.

- CD ROM Server/Tower which holds at least 100 discs. Must support TCP/IP protocol and allow access through a Web browser. Also, the tower hardware/software must allow access control to the level of individual discs by user ID; this is needed in order to address CD licensing concerns. MLC has indicated that the CD ROM Tower will be purchased with funds outside of the budget of this project. Accordingly, the cost for this unit is **not** reflected in this document's project budget. More detailed specifications for this unit have been previously provided to MLC, and are given in Attachment 5 of this report.

- A router management computer. MLC desires to purchase the Spectrum software package (see following section) and thus will be purchasing a hardware platform on which to run this package. The consulting team agrees with this decision.

- Prices for the above hardware are given in the following chart.

Item	Number Needed	Estimated Price	Extended Price	Monthly Maint
Hardware				
Database Server Computer	1	$15,000	$15,000	
Web Server Computer	1	$8,000	$8,000	
FTP/Mail Server Computer	1	$6,000	$6,000	
Spectrum Computer	1	$15,000	$15,000	
Dial-In Modems	8	$250	$2,000	
MLC Learning Lab PCs	16	$2,800	$44,800	
Learning Lab Equipment/Furn	1	$15,000	$15,000	
Hardware Subtotal			*$105,800*	*$1,058*
Software				
Windows NT Server	3	$1,000	$3,000	
SQL Server	1	$2,000	$2,000	
Web Server Software	1	$500	$500	
Spectrum 3.0 Net Mgmt	1	$38,000	$38,000	$475
Spectrum Install/Configuration	1	$5,000	$5,000	
Custom: SQL<-->Web Link	1	$20,000	$20,000	
Dynix/Internet Interface	1	$15,000	$15,000	
Software Subtotal			*$83,500*	*$475*
Network				
CSU/DSU	3	$2,000	$6,000	$30
4500 Router	1	$15,710	$15,710	$0
Dial-In Lines	8	$135	$1,080	$336
2500 Router For Dialin Lines	1	$4,357	$4,357	$35
Network Subtotal			*$27,147*	*$401*

Figure 5: Needed MLC Equipment Price Detail

- Capacity Estimates: it is estimated that the database and Web servers as described above will be able to handle 30 to 40 simultaneous accesses. Note that this is **not** the same as a capacity of 30 to 40 simultaneous **users**; Web access, for example, involves bursts of heavy information download followed by seconds or minutes of the user reading what is on their screen. Specifying 30 to 40 simultaneous accesses means that this number of users actually request information from the server at the same moment. Thus the capacity of the network in terms of simultaneous **users** will be significantly higher; an actual value would depend greatly on what activities the users were requesting. The traffic on the e-mail, router management, and dial-in routers is deemed to be sufficient to handle all of the devices connected on the network.

6. Software Requirements

The following network and system software is recommended, and is based on the use of the Windows NT platforms recommended above. If other platforms (such as Sun or Silicon Graphics) are chosen, then similar software will need to be substituted:

- Windows NT Server software for the server computers. This software comes bundled with TCP/IP and DNS support. NT Server has been specifically designed for server and network applications, and is ideally suited for the tasks which MLC desires to implement.

- Database software for the database server. Recommended: SQL Server software with which a Web server can interact, such as Microsoft SQL Server or Oracle.

- Web server software, such as is available from Netscape, Spry, O'Reilly, Process Software, or Frontier Technologies. Microsoft announced in December, 1995 that Windows NT Server will include Web server capability at no additional cost.

- Software to manage the router environment will be required. As noted above, MLC has evaluated several packages and has selected the Spectrum package from Cabletron. This package has been selected by MLC partly because it performs multiple functions using a single database; in addition to router management, the package will allow MLC to track hardware inventory and provide better "help desk" functions. The consulting team supports this selection.

- MLC will require some custom software development to interface the Web server with the database server; in other words, this effort will be required to allow users to search for and display information in the databases, probably using Web forms and queries. This work can be done by a third-party software developer. Linking of the Web server to the database server may, however, also be done using connectivity software provided by many third party vendors. Microsoft has announced that its Internet Information Server (Web Server) will integrate with the Microsoft SQL server (database server) at no additional cost. Forms development is done using internal resources or can be contracted to third parties.. The level of effort and resource required is a function of the complexity of the application being developed.

- Internet browser and mail software for the client (user) PCs. The recent releases of Web browser software (such as Netscape 3.0) also support electronic mail. Other software provided by the ISP can also be added to access newsgroups. No cost is budgeted for the browser, as most (including Netscape 3.0) are free to public libraries. If MLC should desire to provide "screening" software to inhibit certain Internet functions, this should also be discussed with the ISP.

- Software to interface the Dynix system to an Internet interface. This software is available from Dynix and will reside on the Dynix server. If desired, restricting access to this function to the state's public libraries connected to the network (i.e. keeping general Internet users from this function) can be accomplished through the router and/or restrictions programmed into the Web server software.

- Prices for the above software are given in Figure 5.

- If MLC decides to implement a bulletin board function, this can be accomplished through software readily available from vendors/packages such as Galacticom and Mustang BBS. This software should reside on the mail server.

7. Network Requirements At MLC

- A Cisco 4500 router with 4 serial and 4 ethernet outlets (to connect to MLC's other servers).

- Three T-1 connections to the Jackson Frame Relay cloud to support traffic to/from the libraries and to/from the Internet.

- Each T-1 line will require a CSU/DSU (modem) unit at MLC.

- Prices and exact specifications for all network routers and CSU/DSUs are given in Figure 6 below:

- A blueprint form MLC's hardware and network connections is given in Figure 7.

Location Type	List	Discounted	Maint. (Monthly)
Branch Library (Router Model 1005)			
Cisco 1005 Ethernet/Serial	$795	$600	$15
IP/IPX Feature Set	$1,000	$700	
V.35 Cable	$100	$100	
Installation	$200	$200	
Total	**$2,095**	**$1,600**	
HQ Library (Router Model 2501)			
Cisco 2501 Ethernet/Dual Serial	$995	$697	$25
IP/IPX Feature Set	$1,600	$1,120	
8 MB Memory	$1,000	$700	
V.35 Cable	$100	$100	
Installation	$200	$200	
Total	**$3,895**	**$2,817**	
MLC (Router Model 4500)			
Cisco 4500 Modular Chassis	$6,000	$4,200	$105
4 Ethernet Ports	$6,000	$4,200	
4 Serial Ports	$4,600	$3,220	
Enterprise Feature Set	$3,200	$2,240	
16 MB Memory Upgrade	$1,500	$1,050	
V.35 Cables (3)	$300	$300	
Installation	$500	$500	
Total	**$22,100**	**$15,710**	
MLC (Access Server Model 2511 For Dialup Lines)			
Cisco 2511 Ethernet/Dual Serial/16 Async	$2,095	$1,467	$35
Remote Access Server Feature Set	$2,000	$1,400	
4 MB Memory	$700	$490	
RS232 Cable	$800	$800	
Installation	$200	$200	
Total	**$5,795**	**$4,357**	
CSU/DSU (per site)			
Branch Library: GDC 553 w/ remote mgmt	-	$1,300	$5
HQ (see Notes) - 56 kbps: GDC 553 w/ RM	-	$1,300	$5
MLC - T1: GDC 554	-	$2,000	$10

Note(s)

1. List Pricing from Cisco Price List dated September 1, 1995.
2. Pricing for Model 1005 received verbally from Cisco.
3. Discount of 30 percent assumed. Cables have not been discounted.
4. HQ locations with 2 - 56 kbps circuit should add another $100 for another V.35 cable and another $1000 for an extra 56kbps DSU/CSU.
5. CSU/DSU equipment and maintenance cost is estimated.
6. Taxes and shipping are extra.

Figure 6: Router/CSU/DSU Costs And Specifications

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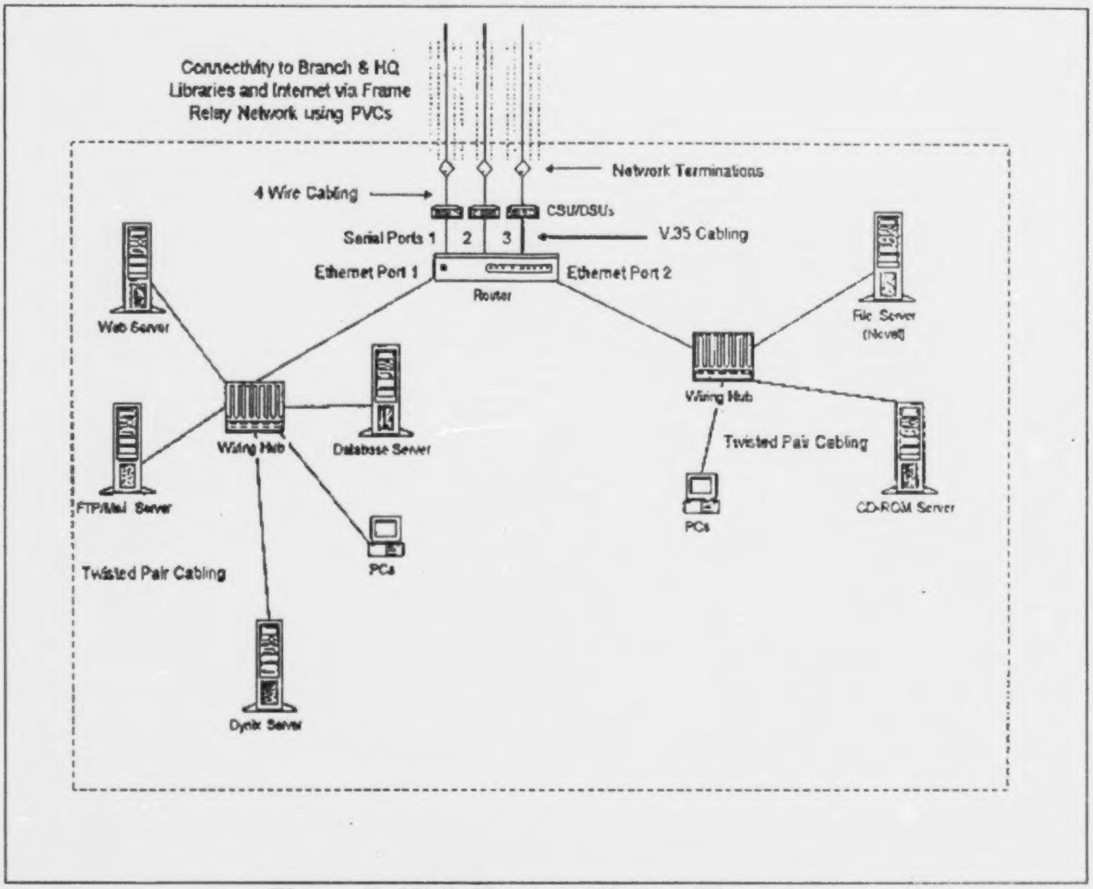
Connectivity to Branch & HQ Libraries and Internet via Frame Relay Network using PVCs
Network Terminations
4 Wire Cabling
CSU/DSUs
Serial Ports 1 2 3
V.35 Cabling
Ethernet Port 1
Router
Ethernet Port 2
Web Server
Wiring Hub
Database Server
FTP/Mail Server
PCs
Twisted Pair Cabling
Dynix Server
File Server (Novell)
Wiring Hub
Twisted Pair Cabling
PCs
CD-ROM Server

Figure 7: MLC Site Installation Blueprint

IP Addressing

In order to properly route and manage the network, Internet Protocol (IP) addresses are needed by:

- Local Area Networks (LANs),
- Devices on the LANs,
- Wide area network (WAN) point to point serial links provided by the Bell South frame relay network, and
- Network devices (e.g. CSU/DSUs).

Two IP addressing strategies - public IP addressing and private IP addressing - are described below, along with advantages and disadvantages of each. Specific, detailed IP addresses for MLC member libraries are given at the end of this document in Figure 16 (device IP addresses) and Figure 17 (WAN IP addresses) for both schemes.

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Public Addressing: This method uses the Internet-provided Class C addresses. Under this scenario the first 3 bytes of a 4 byte IP address are pre-allocated to each district by the assignor, with the definition of the fourth byte under local control (but specified in this document). Under this addressing strategy MLC would acquire one Class C address for each HQ. This address can be segmented and shared between the HQ and its branches. This would be done by dividing the fourth byte of the HQ's Class C (C.C.C.X) address as follows:

X = xxxx yyyy where xxxx represents subnets and yyyy represents devices on a subnet.

This allows for 16 subnets and 14 devices per subnet (Device 0 and 15 are special addresses and not available). Assigning the subnet number to building numbers (HQ is building number 1, branch libraries are assigned building #'s 2, 3, ...), 15 buildings per Class C address could be supported (subnet 0 is not assigned). If there are more than 15 buildings per HQ, then a second Class address would have to be assigned to the HQ.

Of the 14 available devices per subnet, device id 1 is assigned to the Ethernet port on the router and device id 2 is reserved for a LAN server. Device ids 3 through 14 are available for PCs , network printers, and additional servers that need IP address. Multiple subnets would have to be assigned to a building if there are more than 14 devices that need IP addresses.

The following formula can be used to assign the address ranges for the LANs and devices at the branch libraries and the HQs. As mentioned earlier the first address is used for the Ethernet Port and the second address is reserved for a LAN server.

X = (Subnet # *16+1) to (Subnet#*16+14) where Subnet # is the same as the Building #

Subnet Mask = 255.255.255.240

Using the formula, Figure 16 lists address assignments using Class C addressing strategy. Please note that C# represents the first 3 bytes of the Class C address and is pre-assigned.

In addition to addressing the LANs and the devices on the LAN, the wide area links that connect the HQ locations to the branch libraries and the MLC need addresses for routing purposes. The wide area links are represented by the permanent virtual circuits (PVCs) provided via the Bell South frame relay network. Using the public addressing approach, another Class C address (CW.CW.CW.Y) for each HQ has to be assigned and subnetted as follows:

Y = xxxxx yyy where xxxx represents subnets and yyy allows for 6 devices per subnet.

Subnet Mask = 255.255.255.248

Each subnet would represent the serial link connection (2 device id - one per each end) and device ids 3 and 4 can be allocated to the CSU/DSUs that connect to the serial ports. The Class C address can be more efficiently used if SNMP CSU/DSUs are not used. In this case, six bits can be allocated for subnetting instead of five bits allowing support of 64 serial connections per Class C address and 2 device ids per subnet.

Using five bit subnetting the following rules may be used to assign the address for serial links and the CSU/DSUs:

1. Subnet 1 assigned for connection to the MLC
2. Subnets 2, 3.... assigned for serial links to the branch library using building numbers.
3. Device id 1 assigned to distant end of the serial link as viewed from the HQ site.
4. Device id 2 assigned to the serial link at the HQ end.
5. Device ids 3 and 4 assigned to CSU/DSUs if needed.

Using the above rules, addresses can be assigned for the serial connections by using the following formula:

1. Serial sub-interface from branch library to HQ: Y = (Bldg#*8)+1
2. Serial sub-interface from HQ to branch library: Y = (Bldg#*8)+2
3. CSU/DSU at branch library end: Y = (Bldg#*8)+3
4. CSU/DSU at HQ end: Y = (Bldg#*8)+4
   (Note: This address needs to be assigned only once.)
5. Serial sub-interface from MLC to HQs: Y = (1*8)+1 = 9
6. Serial sub-interface from HQs to MLC: Y = (1*8)+2 = 10
7. CSU/DSUs at MLC: Y = (1*8)+3 = 11
   (Note: This address needs to be assigned only once for each DSU/CSU.)

Using the above formula, Figure 17 lists address assignments using Class C addressing strategy. Please note that CW# represents the first 3 bytes of the Class C address used for WAN serial links for each HQs.

Private Addressing: Using this strategy, a private Class A address structure unique for MLC can be developed. The first byte of the 4 byte IP address is assigned a private network address of 10. The remaining three bytes are then available for allocation as deemed fit. The three bytes available can be allocated as follows:

10.S.B.X where 10 is the private network number,
S is the library system number plus 99,
B is the building #,
X ranges from 1 to 254 as device ids with device ids 1 & 2 reserved
for the Ethernet port and the LAN server.

Subnet Mask = 255.255.255.0

Under this scenario 155 library systems can be supported (S ranges from 100 - 254), 255 buildings or LANs can be supported per library system (B ranges from 1 to 255), and 254 devices can be supported per building or LAN (X ranges from 1 to 254). Figure 16 lists the address assignments using the above private addressing strategy.

Wide area links can be addressed by using an address of 99 for the second byte. The third byte can be uniquely assigned to each library system. The fourth byte can be subnetted as was done in the public addressing approach. The following is an example:

10.99.S.X where S is the system number,
X is calculated as (Bldg#*8)+1 for serial link at branch end ,
(Bldg#*8)+2 for serial link at HQ end, 9 for the serial link end at
MLC, and 10 for the serial link at the HQ end for MLC connection.

Figure 17 lists the WAN link addresses using the above formula for private addressing.

Selecting Between Public and Private Addressing: MLC could choose to implement either of the addressing schemes or a combination of both. Selecting one does not preclude the use of the other at a later time. The choice is dependent on address availability, connectivity needs, network size, performance and security needs, and availability of support staff.

Public addressing requires acquiring Class C address. This can be accomplished by requesting it from the ISP or InterNIC and providing appropriate documentation. Use of public address requires no translation when communication takes place outside the library environment.

Given the mission of libraries, it is possible that HQs may want to connect to Internet via multiple means (e.g. Universities, other Library Consortiums, School Districts, etc.) in addition to using the MLC connection. Use of public addresses makes it easy to do so without requiring translation at the HQ or at the other end of the alternate connection or requiring that a PC have multiple IP addresses to directly access the Internet via these multiple methods. Access flexibility is retained with Class C addressing.

Administration and management of public addressing scheme is somewhat easier than using a private scheme. It does not require support for address translation. Newly hired staff are likely to be familiar with public addressing rather than private addressing.

There are benefits with private addressing. It provides a larger address space and more flexibility in address assignment. It avoids the need to acquire addresses from a third party.

Private addressing requires a central point for translation from private to public addresses and back when traffic moves between Internet and the library network. This could create a bottleneck and potential for performance problems. Translation of addresses can be managed and supported by the MLC staff or by the ISP. It is not entirely clear whether the ISP provides this service. In the event they do, there is likely to be an additional charge for the service. Some risk exists if the State changes the current ISP and the new ISP does not provide translation services. If the current ISP does not provide translation services then the MLC staff will need to manage both private addressing scheme and the tables and configuration data needed for translation.

It is perceived that private addressing provides some measure of security since addresses are unique and proprietary (not easily available). While private addresses are difficult to access , the translation service does not guarantee security if the private address is known externally and access to translation process is possible. Additional firewall functions would need to be added to assure a higher level of security. Similar firewall functions can also be added when using public addressing .

While there is no dominant reason (e.g. State standard) to select one or the other addressing scheme, it is recommended that MLC consider using public addresses. The recommendation is made because of its ease of administration, no requirement for centralized address translation and attendant performance issues , and access flexibility. Class C addresses can be acquired with appropriate documentation . This report provides the information needed to apply for the addresses.

Router Configuration(s): The routers at branch libraries, headquarters, and the MLC would have to be configured appropriately based on the addressing scheme selected by the MLC. A sample configuration is included at the end of this document as Figure 18, and uses the public addressing scheme. The configuration can easily be changed to accommodate the private addressing structure.

The sample configuration uses static routing, given there is single route between the libraries and the HQs and MLC. No bandwidth is used for routing update overhead.

8. Network Topology Options

The consulting team identified three options for connecting the public library endpoints with the MLC in Jackson. These options were evaluated with ITS in order to maximize efficiency and workability while minimizing costs. All of these options assume the network will be built within the framework of the Bell South Frame Relay environment currently being installed in Mississippi (see Figure 1).

Given the overall telecommunications environment in Mississippi, it is not recommended that MLC pursue vendors other than Bell South. The committed relationship between Bell South and the

State combined with the **very** favorable pricing for lines received from Bell South is the basis for this recommendation.

The networking options are explained below, along with features/comments; each is pictured in Attachment 3:

Option 1: Headquarters Location As Switching Hub

In this option, each headquarters (HQ) library acts as a hub for its own branches. Private Virtual Circuits (PVCs) go from the HQ to each branch through the local cloud using 56 kbs lines; the HQ are connected to the cloud through a 56 kbs line or a T-1 line, depending on traffic estimates. This option requires that a router be placed at each HQ and branch. Comments on this option:

- Each library system is independent; problems at one HQ location should not impact others
- Requires one PVC connection from each HQ to MLC, at a slightly higher cost ($2 per month per PVC)
- Some HQ locations may require bigger router and higher bandwidth access link to the Frame Relay, at higher costs

Option 2: Single Switching Hub Per Cloud

In this option, each branch and HQ library is connected via a PVC to a single hub point for each of the Bell South clouds. This requires a larger router at the cloud sites. Comments on this option:

- Requires fewer PVC connections from each cloud to MLC
- Requires one large router per Frame Relay cloud instead of more smaller ones result in some cost savings
- Support can be centralized per cloud
- Failure at switching hub impacts all libraries connected to that cloud
- Provides better utilization of access link; all locations use 56 kbs access and switching hubs use T-1 access
- Traffic between HQ and its own branches has to flow through switching hubs

Option 3: Centralized Switching In Jackson

In this option, each branch and HQ library is connected via a PVC which travels all the way to Jackson, where all switching is done.

- A single point of failure (MLC) exists for all locations
- MLC is a *potential* performance bottleneck; traffic from a library must go to MLC before reaching any destination, including its own HQ
- Routers at branches and HQs are the same (for easier support)
- All locations access the network via 56 kbs circuits, resulting in lower network costs
- Support for complexity is centralized at MLC

A detailed analysis was undertaken which detailed the equipment necessary for each option (see Attachment 4). This analysis showed that the difference in cost among the three options is relatively small. Given this fact, the consulting team has selected **Option 1 as the recommended topology for the network.** All of the costs presented in this document assume a network created per this option.

Figure 14, "Frame Relay Network Cost Worksheet" details the specific configuration of this network. Basically, each branch assigned a dedicated line is connected to its HQ through a 56 kbs Frame Relay connection. Branches assigned a dial-in line are discussed below. Branches served by a different cloud than that which serves the HQ are routed to their local cloud. Nine HQs with more than 8 branches are assigned two 56 kbs lines to their cloud instead of one. Inter-cloud links ranging from one 56 kbs line to a full T-1 are proposed, depending on anticipated traffic. A more detailed explanation of this spreadsheet is given in Section 16.

Dialup Versus Dedicated

In evaluating dial-up scenarios, several alternatives were examined:

- Having branches dial their HQs for network access;
- Having all branches dial MLC in Jackson through state 800-line service;
- Having all branches dial MLC in Jackson through standard state business line rates.

- Having all branches dial directly into their local Frame Relay cloud.

Among the first three options, having all dial-up lines go to Jackson is recommended because the cost difference between this option and the others is only a few pennies per minute, and support for dial-in users (and equipment) would be much easier at MLC than distributed out among the HQs. It is not advisable to have HQs be responsible for supporting dial-in lines to their location due to possible personnel shortages and/or lack of telecommunications networking experience at the HQ locations.

An extensive analysis of the costs to create and operate a "dial into MLC" environment using standard state business-line rates was conducted. Branch libraries with anticipated low usage were identified, primarily by their being open less than 20 hours per week. Fifty-one such libraries were found. Another fifteen sites were specified for dialup access because they are served by local telephone companies (i.e. not by Bell South) and their dedicated connections would be very expensive compared to Bell South sites[1] . The cost analysis shows that MLC would actually save very little money using this topology; in fact, the monthly cost of a dialup line would be **more** than the cost of a dedicated 56 kbs line if usage exceeded 30 hours per month.

Another factor in deciding dial-up use is that many of the local voice-grade lines in Mississippi will not support 28.8 kbs operation. This means that users dialing on such lines will see their modems drop to 14.4 kbs connections. This speed is considered to slow for effective network operation.

Having branches dial directly into their local Frame Relay cloud is deemed to be the only viable *long term* dial-up environment worthy of consideration. However, this service is not yet offered in Mississippi, although Bell South does offer the service in other states and anticipates making this service available in the hear future. This situation will require close monitoring by MLC. A final decision on whether to have some branches use dial-up technology (by dialing directly into the cloud) can be re-evaluated in 1996, as the recommended timeline shows that the branches are not to be connected until 1997.

Apart from all the above practical considerations is the fact that branches will be required to pay their own recurring (i.e. monthly) telecommunications charges, and many branches cannot afford the cost of a dedicated line. For these branches, the choice is limited dial-up access or no access at all. The following two figures show the relationships between hours of use and cost for both dedicated line access (using the lowest Bell south figure of $127 per month) and dial-up use (assuming dialing into MLC using state business rates). These charts show that the "cross-over point" at which a dedicated line's cost equals dial-up costs is 30 hours per month if an existing telephone line is used and 20 hours per month if the branch installs a new telephone line.

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[1] The nineteen sites were assigned dial-up install/monthly charges at the same rate as the Bell South sites. However, it is likely that their actual dial-up charges (including the $.07 per minute usage rate) would also be substantially higher than Bell South's state rates. In this event, it could still be true that the dedicated line to these libraries, although expensive, could remain less costly than dial-up.

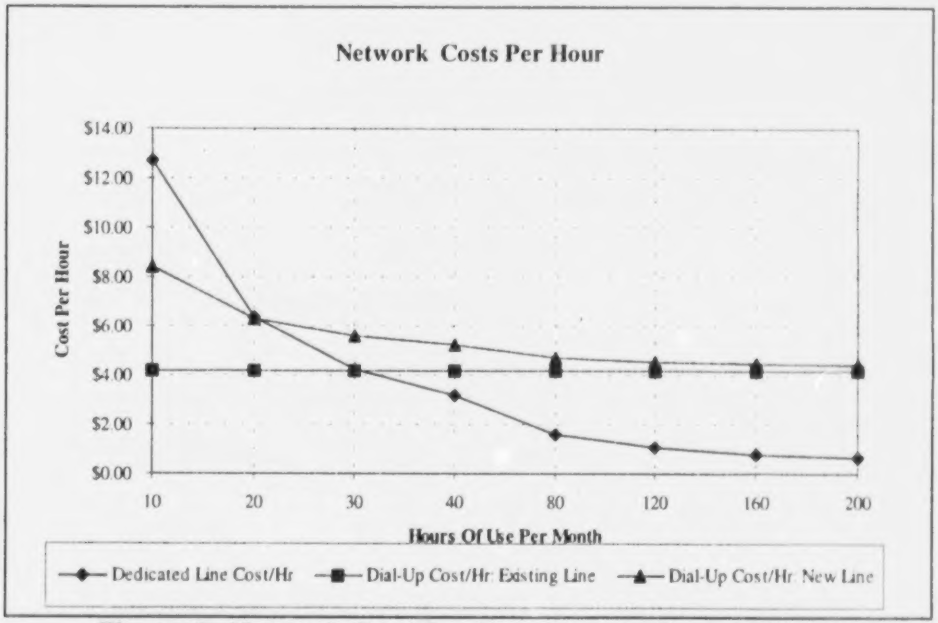

Figure 8: Network Cost Per Hour Verses Hours Of Use

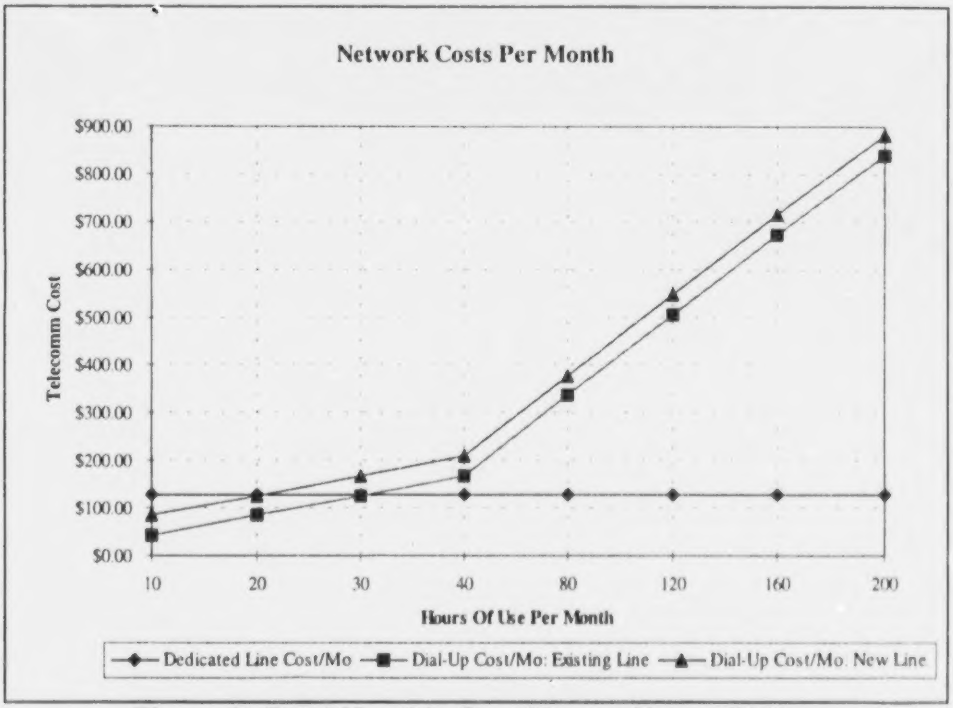

Figure 9: Total Monthly Cost Versus Hours Of Use

As mentioned above, 66 libraries have been designated as using dial-up circuits for network access. These libraries were so designated either because they are open less than 20 hours per week **or** because they are located in areas where dedicated line access would be prohibitively expensive. The recurring (monthly) costs assigned to each of these libraries is calculated based on an assumption that the library will be dialed into the network for one-quarter of the hours it is open to the public.

MLC will require dial-in facilities apart from the needs of the branches, in order to support telecommuting and remote network management. The cost of these lines and the associated equipment is reflected in the cost figures of this document.

9. Equipment At The Endpoints

The budget for the bond sale proceeds financing the creation of this network includes $750,000 to be used for the purchase of PCs to be placed in the libraries. This amount is over and above the money allocated for networking hardware/software, and was based on the parameters of spending $3,750 to equip 200 locations.

It is recommended that each library PC have the following specifications:

- Windows '95 PC, Pentium processor or better
- Minimum 16 MB memory, 500 MB hard disk space
- Color SVGA monitor, 15" or larger
- Network adapter card for connection to router (dedicated line locations) or 28.8 Kbs data modem (dial-up locations)
- Sound card and speakers; one CD-ROM drive
- At least 1 MB on-board video RAM

Libraries with existing PC networks will require a network card compatible with their existing networks; the cost for such a card (about $100) is not included in this project budget, and would be the responsibility of the affected library. Such libraries may also require a larger router than the unit budgeted for this purpose. In either case, libraries intending to connect more than one PC to the network must obtain MLC approval for the additional endpoints, and for the connection of additional equipment to the network.

The PCs should be purchased with Windows '95 preloaded. Windows '95 includes the necessary TCP/IP support required by the network. Before deployment, the PCs will need to be updated with the chosen Internet browser and mail reader (such as Netscape 3.0 or some subsequent version), unless Windows '95 becomes bundled with such software in the future. Other software may be necessary, such as WinShield protection software for public access PCs. Telnet software is highly recommended; this will allow users to access ASCII (non-graphical) hosts.

It is very important that MLC establish a policy with respect to allowing the libraries to add other software to the network PC. The installation of some software could interfere or conflict with the network hardware/software, and should only be done if approved by MLC. MLC will not guarantee support for PCs to which unauthorized software and/or hardware has been added. In addition, the MLC will be unable to support authorized add-ons to individual systems.

In addition, it is recommended that each library be given a choice of receiving a FAX machine or a laser printer, according to each library's needs. For the purposes of this choice, it should be assumed that the FAX machine and the printer are of equal cost.

As indicated earlier, each branch connected to the network via a dedicated line must be equipped with a Cisco 1005 router and a GDC 553 CSU/DSU. It is critical that these devices be capable of remote management. HQ libraries will receive a Cisco 2501 router and one (or two) GDC 554 CSU/DSU(s).

At the library, it is recommended that all equipment be powered from a single power strip which features surge protection and a single on/off power switch.

If any of the libraries wish to connect additional PCs to the network, this can be done through the use of simple, inexpensive wiring hubs into which both the router and the PCs would connect. Simple, five-port twisted-pair hubs cost less than $100. **Note:** no money for connecting additional branch/HQ PCs to the network have been allocated in this project budget. Any PCs or other network hardware/software added by system libraries must be approved beforehand by MLC Automation Services.

It is **not** recommended that individual printers at the HQs or branches be connected to the network as network devices. Aside from the fact that network printers take up an IP address (see Section 7), adding a printer to the network should be done only if remote printing is done (i.e. it is necessary to route materials from one network location directly to another location's printer). Given the other document routing capabilities of this network (e-mail, FTP, etc), this functionality is not seen as required. Rather, local printers should be connected either to the local branch PC via its parallel port or, if present, via a Local Area Network print server.

Conceptual local connection diagrams are shown in Figures 10, 11, and 12.

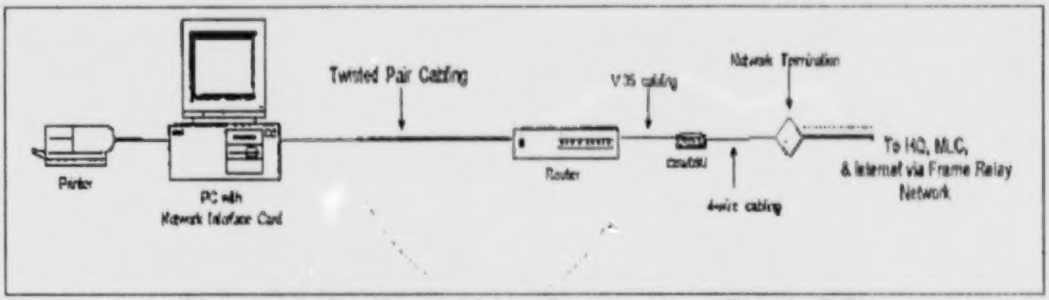

Figure 10: Dedicated Line Connection (Single PC)

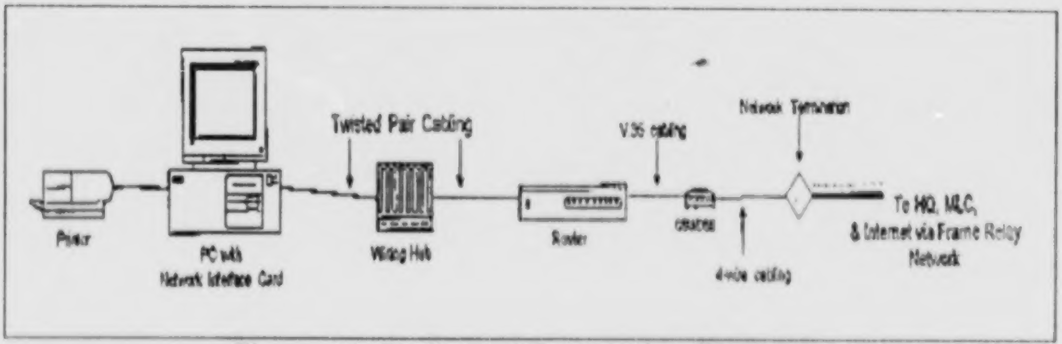
Printer
PC with
Network Interface Card
Twisted Pair Cabling
Wiring Hub
Router
V.35 cabling
CSU/DSU
Network Termination
4-wire cabling
To HQ, MLC,
& Internet via Frame Relay
Network

Figure 11: Dedicated Connection (Network)

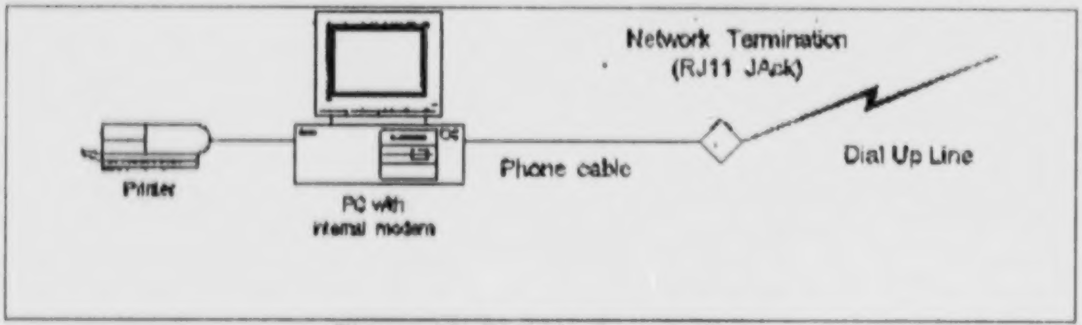
Network Termination
(RJ11 JAck)
Printer
PC with
internal modem
Phone cable
Dial Up Line

Figure 12: Dial-Up Connection

10. Personnel Issues

As of this writing, MLC has added three staff members who will have primary responsibility for the proposed data network. Among the functions assigned to these positions are telecommunications network responsibility, Webmaster responsibilities, and network support (help desk) responsibilities. These staff additions are seen to be adequate for the initial operation period of the proposed network. In order to get the network installed and running, however, it is recommended that MLC hire a limited-term employee or consultant to oversee the network installation (see Section 12). Once the network is fully operational, additional network support staff may be required as the population of devices, the use of the network, and the amount of MLC information offered on the network all increase.

The MLC network has been designed so that additional personnel at the HQs and branches will not be required.

11. Training Issues

User training will be a critical issue in the overall success of the MLC network. The following specifications for the user training provided to public libraries follows:

Who should be trained: at least two representatives from each library (branch and HQs). These representatives should be the personnel who will actually use the network the most. It is not advisable to confine training to HQ personnel and then depend on them to train the branches.

When training should take place: after a library's computer and network lines/equipment are in place and ready to use, or as close to this date as possible. The training will not be effective if there is any delay between the receipt of the training and the actual use of the network at the library.

Where training should take place: it is recommended that the training take place Jackson whenever possible. In support of this effort, it is recommended that a PC training lab be set up at MLC for hands-on training sessions. This lab can also be used to test and configure the PCs to be placed in the libraries. The lab PCs should be connected to the network so that lab PC users will experience exactly what they will see when they return to their home libraries. The cost for this lab has been included in the MLC equipment costs shown in Figure 5. The stated cost includes lab PCs, and also includes an amount for "equipment and furniture". The latter amount is meant to cover a screen projection device, a screen on which to project the image, and tables for the workstations.

On an ongoing basis, it is inevitable that MLC will be asked to provide one-to-one onsite training at the libraries. This should be handled on a case-by-case basis. Given that onsite training should not be done before a library's computer is attached to the network, this training could be done using the library's own PC. MLC may wish to consider the purchase of one or more laptop computers for cases where a library is visited that does not have a working network station; these laptops would require a 28.8 kbs modem for dialing into the network, and should have color monitors. Required software would include a web browser (such as Netscape) and dialup WINSOCK software, all of which can be downloaded from the Internet at no cost. Such laptops are estimated to cost about $3000 each. The purchase of laptops is not reflected in the project budget.

Who should conduct the training: as much as possible, the training should be done by MLC personnel to the extent that these personnel have a reasonable amount of presentation skills. Specifically, the MLC Network Manager should provide the network training, and the person responsible for the Help Desk should provide the troubleshooting and problem escalation portions of the training. Anyone familiar with PCs can provide the basic, introductory portions of the program. If MLC deems that their personnel do not possess the required presentation or teaching skills, then an outside agency should be retained to conduct the training at MLC.

User Training Outline: It is recommended that all network users be given two days of training.

Day One, Morning Session

The first session of the first day would be devoted to concepts for users who have never used a computer before; this session may be skipped for more experienced PC users. This session, anticipated to last 3 hours (one-half day), would include:

- How to power on the PC and monitor;
- Windows '95 basics: how to use a mouse (left button, right button, double-clicks); opening/closing windows and boxes; finding files and programs; using the "Start" bar; opening multiple windows and switching between them; using pull-down menus, setting user/desktop preferences.
- Basic computer troubleshooting; restarting the computer; most common problems
- Using the CD-ROM and floppy discs; accessing/transferring files to/from discs; saving information; performing backups; protection from viruses.

Day One, Afternoon Session

- Basic telecommunications principles: identification of components (router, CSU/DSU), indications given during normal operation (lights, etc).
- Basic networking principles: defining the frame relay environment; dial-up versus dedicated lines; the principle of packet networking; IP addressing; the role of the router.
- Establishing network connection. For dial-up users, this means initiating the telephone call to MLC, while for dedicated users the network should always be available. It is recommended that all users be exposed to training on both types of connects.
- Logging into/out of the network; operation of network menus; overview of available services.

Day Two, Morning Session

- Explanation of what Internet is (and isn't); components of the Internet (World Wide Web, discussion groups, electronic mail).

- Use of the Internet browser for Internet access and MLC database access; using Web forms and setting user preferences; hyperlinks; searching the Internet; setting bookmarks; common resources useful to libraries.

- Accessing the Dynix system and other MLC applications.

- Time for "exploring" and net surfing.

Day Two, Afternoon Session

- Configuring the e-email program: users should be given their e-mail addresses, and be led through configuring their e-mail browser.

- Composing e-mail; maintaining address book; sending messages; receiving messages; setting up file cabinets; replying to messages; forwarding messages; practice session where students send mail to one another.

- E-mail etiquette.

- Network support issues: common problems and their solutions; how to report a problem; escalation procedures; how to best assist the Help Desk in troubleshooting problems.

At the conclusion of the training, each participant should be given a notebook of training materials, including "quick reference" cards summarizing network operation and basic troubleshooting procedures.

The complete, detailed training program should be started immediately. Training materials and procedures should be tested during the HQ pilot phase (see following section) and appropriate revisions made during the course of the network deployment. If possible, it is recommended that early training sessions be videotaped so that careful analysis and improvement of the classes may take place. After the entire network is operational, it is assumed that the training program will need to be continued as new library personnel and new network applications are continually added.

Training For MLC Employees: Help Desk (and possibly other) MLC employees will require training for all hardware and software purchased for the network. It is recommended that this training be procured, where possible, from the vendor(s). For example, training on the Spectrum system should be obtained from the Spectrum vendor. Less specialized training, such as for Windows NT, HTML page authoring, TCP/IP network management, etc, should be obtained through outside courses selected from state-approved lists of third-party training providers.

Other Types Of Training: there are some types of training which MLC should not offer until after the network is operational and the public libraries have all been trained on basic network operation. These additional training topics may then be considered for offer to the public libraries by MLC.

- Advanced data networking: creating a LAN in a branch or HQ library; interfacing the LAN to the network.
- Training the public to use the network.
- How to create/maintain/update a home page on the Web.

12. Network Deployment Issues

The proposed network, while completely feasible and of sound design, is nevertheless quite complex and will require careful implementation. It is recommended that a "top-down" method be used; that is, the central site (MLC) must be equipped and made operational before the "downstream network points" (i.e. HQs and branches) are added. The basic implementation steps are:

1. Work with ITS to approve the plan constituted by this document. Continue to monitor the process by which the bond money (necessary to fund network startup) is released.

2. Install/configure all network hardware and software at MLC, with the exception of the Database server and associated software (see Figure 13). The items to be installed include the Internet link, the main T-1s into the Frame Relay cloud, and the other MLC servers, software, and network components.

3. Implement a pilot program consisting of approximately eight to twelve HQ libraries, including two or three branch libraries who will use dial-up access. One HQ should be chosen from each Frame Relay cloud. The chosen HQs should be ones that are already comfortable and familiar with telecommunications, networking, and computer technology. However, one HQ that is not familiar with this technology should be included so that training and support issues can be more easily identified. Some of the dial-up branch libraries will probably not be familiar with computers. The following libraries are proposed as candidates for the pilot program, based on the above criteria:

    - Bay St. Louis-Hancock County Library
    - Hattiesburg, Petal, and Forrest County
    - Welty PL, Jackson
    - Meridian-Lauderdale County Library
    - Hernando PL

- Starkville PL
- Robinson-Carpenter Library, Cleveland
- Prentiss PL (dial-up)
- Itawamba County Lib, Fulton (dial-up)
- Shelby PL (dial-up)

4. Following the pilot program, the network should be extended to all HQs. It is recommended that installation of the routers be accomplished by the vendor; installation costs have been included into the router prices. The PCs should be configured and tested at MLC, and then either delivered to HQ or installed by MLC personnel.

5. Finally, the network should be extended to the branches.

MLC may wish to consider hiring a technical Project Manager to coordinate the network implementation. Although the MLC Telecommunications Specialist could certainly handle this task, it is envisioned that the Specialist will have a great many other responsibilities during this time (such as helping to create training materials and working with the libraries). Also, it could be useful to employ a person who has experience in actually setting up networks similar to the MLC network. Hiring an FTE is not recommended, as it is envisioned that the Project Manager position would not be required after the network is created. No costs associated with such a position are included in the budgets contained in this document. As an estimate, a Project Manager who spent approximately 20 hours per month for a period of one year would cost in the neighborhood of $25,000. This approach is recommended over depending on ITS for guidance; while ITS certainly has the expertise and would be quite willing to assist MLC, it is doubtful that ITS could devote the time to MLC which would be required to assure a smooth installation. The cost of this Project Manager is included in the project budget (see Figure 2 and Figure 14).

A diagram of this implementation, with a suggested timeline, is provided below:

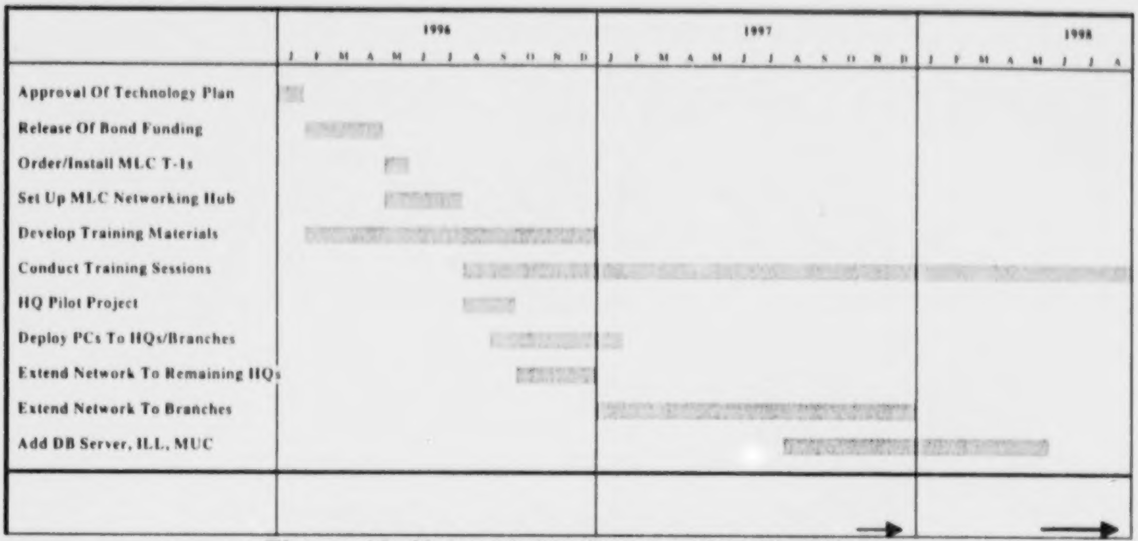

Figure 13: Network Implementation Timeline

Item	FY 1996	FY 1997	FY 1998		
MLC Hardware					
Web Server Computer	$8,000.00				
FTP/Mail Server Computer	$6,000.00				
Spectrum Computer	$15,000.00				
Dial-In Modems	$2,000.00				
MLC Learning Lab PCs	$44,800.00				
Learning Lab Equipment/Furn	$15,000.00				
Database Server Computer			$15,000.00		
Software					
Windows NT Server	$3,000.00				
Web Server Software	$500.00				
Spectrum 3.0 Net Mgmt	$38,000.00				
Spectrum Install/Configuration	$5,000.00				
Dynix/Internet Interface	$15,000.00				
SQL Server			$2,000.00		
Custom: SQL<-->Web Link			$20,000.00		
MLC Network Equip	$27,146.50				
MLC LTE Project Mgr	$25,000.00				
Telecommunications Costs:					
Network Equipment At HQs/Br		$304,512.75	$304,512.75		
Dedicated Lines	$300.00	$16,678.00	$16,678.00		
Dialup Lines		$4,185.00	$4,185.00		
Computer Equip At HQs/Br		$375,000.00	$375,000.00		
TOTAL ANNUAL COST	$204,746.50	$700,375.75	$737,375.75		

Figure 14: Dollar Requirements Per Fiscal Year

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13. Network Support Issues

MLC has already indicated its plan to create a "help desk" for support of network users. This plan is highly recommended by the consulting team. The Help Desk would support both dedicated-line users and dial-up users (who, as outlined previously, will be dialing directly into MLC). MLC plans to purchase the Spectrum software package to manage the Help Desk function.

When users encounter operational problems, a clear line of escalation should be followed. It is recommended that a user's initial call for help go to a designated primary or backup contact at its HQ; most problems can be corrected in this manner. If that call does not resolve the problem, then the MLC Help Desk should be contacted.

It is recommended that Help Desk calls be tracked by the location initiating the call, so that recurring problems can be identified. Help Desk records should include a photograph of the branch's network installation, which can be taken when the equipment is installed. Also, it is important that each library's CSU/DSU, router, and PC be clearly labeled with the unit's IP address and with a label identifying the box (i.e. "Router", "CSU/DSU"). This labeling can either be done during installation or before installation, and will further assist the Help Desk in resolving problems.

14. Security And Firewalls

Securing the network environment requires that MLC establish a security policy that articulates what is acceptable and what level of access is available to patrons, library staff, and MLC staff. The security policy must be published to make sure that everybody is aware of their responsibilities.

Host systems and applications should provide access control using userid/password combination. New applications currently being planned (e.g. CD-ROM server) should be network aware and provide application level security. In addition to application level security, network security may be provided using firewalls.

The objective of a firewall is to protect one network from another network. In MLC's case, the objective of the firewall is to protect unauthorized access from the Internet. The term firewall is used by many as a generic term to describe a wide range of functions and architectures of devices that protect the network. In MLC's environment, firewalls can be implemented by using packet filters and proxy servers (also called application gateways).

At a minimum, MLC should use the Cisco 4500 that connects to the Internet as a screening router using packet filters. Incoming traffic (mail, FTP, Web) should be directed to only designated servers (FTP/Mail, Web). The servers could be configured on a separate Ethernet segment to provide an added level of network separation. Packet filtering at the branch and HQ libraries may be sufficient if there are no host services provided by those libraries. The dialup server at MLC should be secured at a minimum with userid/password. Passwords should be changed at least once every 30-45 days.

MLC could choose to install a proxy server, which is generally stronger than packet filters. Proxy servers add considerable inconvenience for administrators and end users. Each application (e.g. FTP, Finger, HTTP, NFS, NNTP, SMTP, POP, etc.) that runs through the firewall needs its own proxy. Some firewalls require every machine that communications through the firewall to run modified client and server software. Those that do not require modified software require end users to learn special procedures to negotiate through the proxy.

In our opinion, packet filtering and host based security (userid/password) is sufficient for initial implementation. Proxy servers may be implemented at a later time if deemed necessary or required by state policy. Cost of a firewall that implement packet filtering and proxy services could range from $15,000 to $25,000 (Vendors: Checkpoint Software Technologies, Lexington, MA - Product: Firewall-1: Harris Computer Systems Corp., Fort Lauderdale, FL - Product: Cyberguard 2.0).

We would recommend that technical staff periodically review system log information on the servers to assure that no unauthorized access occurs.

15. Next Steps

It is recognized by the Consulting Team that ongoing changes in the MLC's operating and fiscal environments will necessitate changes in the data network plan. Specifically, this plan could be greatly affected by federal/state legislative action (or inaction), other funding milestones, availability and pricing of services from Bell South, policy decisions by ITS, and changes in offerings by equipment vendors, to name but a few. These actions will require that the basic plan presented in this document be "fine tuned" to take best advantage of the changes. Examples of these changes could include which libraries are connected via dial-up or dedicated lines, what specific hardware and software is purchased, etc. In the absence of any changes, the Consulting Team believes that the plan presented herein is the best course for MLC to follow; however, MLC should expect and plan for changes to this plan as the network is created.

16. Attachments

Immediately following this section is Figure 15, a detailed spreadsheet providing a library-by-library breakdown of the proposed network. This spreadsheet was used to determine the overall estimated costs for the telecommunications lines and library equipment costs. A detailed explanation of the entries in this spreadsheet follows:

- The spreadsheet contains entries for all public libraries in the state, and is ordered by the library **system name** (column 2). Within a system, the order is alphabetic by **library name** (column 1). The **city** in which the library resides is provided in column 3.

- The "**# Of Loc**" column has entries only for the HQ libraries, and counts the number of branch libraries associated with that HQ.

- The "**# Of Dedic Loc**" column also has entries only for HQ libraries, and counts the number of branch libraries within its system which will be connected to the HQ via a dedicated data line; this count includes the HQ itself. Note: any branch library whose local Frame Relay connection point is different from the HQ's Frame Relay connection point (see following item) is proposed to be connected to the network through MLC in Jackson rather than through the HQ, and thus is not counted in this column's number (example: Sebastopol PL connects through the Meridian Frame Relay cloud, but the HQ for this system, Florence PL, connects through Jackson; thus, Sebastopol is not counted in the 12 libraries to be connected to Florence with dedicated data lines). The remainder of the libraries within that system are proposed to be connected via dial-up lines.

- The "**FRelay Node**" column shows which of the Bell South Frame Relay nodes serves this library. The codes are as follows: Gp=Gulfport; Gw=Greenwood; Ha=Hattiesburg; Jk=Jackson; Me=Meridian; Mp=Memphis; Tu=Tupelo.

- Libraries whose local telecommunications services are provided by Bell South are indicated by "S" in the "**SB/IND**" column; libraries served by independent, non-Bell companies are indicated by "I".

- The "**SB Mile**" column gives the number of miles a library is from the borders of "local service" for Bell South Frame Relay service. Only a few libraries are not within local Bell South service.

- The "**Ind Mile**" column gives the number of miles a library is from the borders of "local service" for a library not served by Bell South.

- All libraries connected via dedicated lines are assumed to be connected to their HQ as a "hub" point. Libraries that are exceptions to this rule are those with an entry in the "**Hub Location**" column (see explanation for "# Of Dedic Loc" column above).

- The "**Dedicated Lines Install**" and "**Dedicated Lines Recur**" columns give one-time costs ("install") and monthly costs ("recur") for dedicated data line(s). **Libraries with entries in these columns are proposed to be connected to the network via a dedicated line**. Most libraries are configured with a single 56 kbs Frame Relay line; HQs with more than eight dedicated-line branches are assigned two 56 kbs lines (see Section 8). The parameters used for these charges are taken from values set at the end of the spreadsheet.

- The "**Dialup Line Install**" and "**Dialup Line Recur**" columns give one-time costs ("install") and monthly costs ("recur") for a single analog dial-up data line. **Libraries with entries in these columns are proposed to be connected to the network via a dial-up line**. The recurring monthly cost is based on a standard state business line and the assumption that the library will be dialed into the network for one-quarter of the hours it is open to the public (see Section 8). The parameters used for these charges are taken from values set at the end of the spreadsheet.

- The "**Equipment Purchase**" and "**Equipment Maintenance**" columns give prices for the equipment (one-time cost) and recurring maintenance charges for that equipment. This equipment is assigned as follows: For branch libraries connected via a dedicated line, one CSU/DSU per line and one Cisco 1005 router; for branch libraries connected via a dial-up line, one 28.8 kbs modem; for HQ libraries, one Cisco 2500 router and one CSU/DSU per line. The router and CSU/DSU prices are automatically taken from the spreadsheet given in Figure 6, "Router/CSU/DSU Costs And Specifications" and *include installation*.

The totals for dedicated lines install, dedicated lines recurring, dial-up lines install, dial-up lines recurring, equipment purchase, and equipment maintenance are automatically transferred to the "Network Cost Summary" spreadsheet shown in Figure 2.

Figure 16 shows a detailed blueprint for device public and private IP addressing (see Section 7). Figure 17 provides a detailed blueprint for WAN IP addressing (public and private). Figure 18 provides detailed sample router configurations for MLC, HQ, and branch library routers.

The following additional materials are attached to this document:

1) "MLC Library Survey" document
2) "Survey Results" spreadsheet
3) "Option 1/2/3" network topology diagrams
4) "Network Connectivity Options" spreadsheet
5) "MLC CD-ROM Tower Specifications" document

These materials exhibits provide background supportive material relating to the factors which influenced the decisions made in designing the network, but are not directly related to the network design itself.

Frame Relay Network Cost Worksheet

										Network (Note 2 and 4)				Equipment	
Library	System	City	# Of Loc.	# Of Dedic Loc	FRelay Node	SB/ IND	SB Mile	Ind Mile	Hub Location	Dedicated Lines Install	Dedicated Lines Recur	Dialup Line Install	Dialup Line Recur	Purchase (Notes 1 and 3)	Maint.
Bond Memorial	Benton	Ashland	2	2	Tu	S				$100	$131			$4,117	$30
Hickory Flat PL	Benton	Hickory Flat			Tu	S				$100	$127			$2,900	$20
Blackmur Mem L	Blackmur	Water Valley	1	1	Tu	S				$100	$129			$4,117	$30
Benoit Public Lib	Bolivar	Benoit			Gw	S						$135	$76	$250	
Cleveland Depot	Bolivar	Cleveland			Gw	S				$100	$127			$2,900	$20
Field Mem Lib	Bolivar	Shaw			Gw	S				$100	$127			$2,900	$20
Gunnison PL	Bolivar	Gunnison .			Gw	S						$135	$76	$250	
Rayner ML	Bolivar	Merigold			Gw	I						$135	$76	$250	
Robinson-Carpenter	Bolivar	Cleveland	8	5	Gw	S				$100	$137			$4,117	$30
Rosedale PL	Bolivar	Rosedale			Gw	S				$100	$127			$2,900	$20
Shelby PL	Bolivar	Shelby			Gw	S						$135	$160	$250	
Carrollton-N Carr	Carroll County	Carrollton	2	2	Gw	S				$100	$131			$4,117	$30
Vaiden PL	Carroll County	Vaiden			Gw	S				$100	$127			$2,900	$20
Sebastopol PL	Central MS	Sebastopol			Me	S			Jackson	$100	$127			$2,900	$20
Brandon PL	Central MS	Brandon			Jk	S				$100	$127			$2,900	$20
D'Lo PL	Central MS	D'Lo			Jk	S						$135	$84	$250	
Florence PL	Central MS	Florence			Jk	I	9	1		$423	$192			$2,900	$20
Ford Library	Central MS	Taylorsville			Jk	S				$100	$127			$2,900	$20
Forest PL	Central MS	Forest			Jk	S				$100	$127			$2,900	$20
Harrisville PL	Central MS	Harrisville			Jk	S						$135	$92	$250	
Lake PL	Central MS	Lake			Jk	S						$135	$80	$250	
Magee PL	Central MS	Magee			Jk	S				$100	$127			$2,900	$20
Mendenhall PL	Central MS	Mendenhall			Jk	S				$100	$127			$2,900	$20
Mize PL	Central MS	Mize			Jk	S						$135	$76	$250	
Morton PL	Central MS	Morton			Jk	S				$100	$127			$2,900	$20
NW Point Resevoir	Central MS	Brandon			Jk	S				$100	$127			$2,900	$20
Pearl PL	Central MS	Pearl	20	12	Jk	S				$200	$278			$5,417	$35
Pelahatchie PL	Central MS	Pelahatchie			Jk	S				$100	$127			$2,900	$20
Polkville PL	Central MS	Morton			Jk	S						$135	$92	$250	
Puckett PL	Central MS	Puckett			Jk	S						$135	$105	$250	
Richland PL	Central MS	Richland			Jk	S				$100	$127			$2,900	$20
Robinson Mem L	Central MS	Raleigh			Jk	S				$100	$127			$2,900	$20
Sandhill PL	Central MS	Sandhill			Ha	I			Jackson			$135	$139	$250	
Carnegie PL	Clarksdale-Coahoma	Clarksdale	1	1	Gw	S				$100	$129			$4,117	$30
Biggs Mem Lib	Copiah-Jefferson	Crystal Springs			Jk	S				$100	$127			$2,900	$20
Covington Mem	Copiah-Jefferson	Hazelhurst	4	4	Jk	S				$100	$135			$4,117	$30
Hamilton Mem	Copiah-Jefferson	Wesson			Jk	S				$100	$127			$2,900	$20
Jefferson Co Lib	Copiah-Jefferson	Fayette			Jk	S	13			$100	$142			$2,900	$20
Calhoun City PL	Dixie	Calhoun			Tu	I						$135	$168	$250	
Edmondson ML	Dixie	Vardaman			Tu	I						$135	$168	$250	
Houlka PL	Dixie	Houlka			Tu	I						$135	$88	$250	

Figure 15

Frame Relay Network Cost Worksheet

										Network (Note 2 and 4)				Equipment	
Library	System	City	# Of Loc.	# Of Dedic Loc	FRelay Node	SB/ IND	SB Mile	Ind Mile	Hub Location	Dedicated Lines Install	Dedicated Lines Recur	Dialup Line Install	Dialup Line Recur	Purchase (Notes 1 and 3)	Maint.
Houston Carnegie	Dixie	Houston			Tu	S				$100	$127			$2,900	$20
Okolona Carnegie	Dixie	Okolona			Tu	S				$100	$127			$2,900	$20
Pontotoc Ctry Lib	Dixie	Pontotoc	8	5	Tu	S				$100	$137			$4,117	$30
Sherman Lib	Dixie	Sherman			Tu	S				$100	$127			$2,900	$20
Yancy Mem Lib	Dixie	Bruce			Tu	I	20	11		$423	$205			$2,900	$20
Enterprise PL	East MS	Enterprise			Me	S						$135	$80	$250	
Pachuta PL	East MS	Pachuta			Me	S						$135	$80	$250	
Quitman PL	East MS	Quitman	9	2	Me	S				$200	$258			$5,417	$35
Stonewall PL	East MS	Stonewall			Me	S				$100	$127			$2,900	$20
Bay Springs Mun	East MS	Bay Springs			Jk	I	13	8	Jackson	$423	$201			$2,900	$20
Louin PL	East MS	Louin			Jk	I						$135	$80	$250	
Parker Mem Lib	East MS	Heidelberg			Ha	S			Jackson	$100	$127			$2,900	$20
Shubuta PL	East MS	Shubuta			Ha	S						$135	$80	$250	
Waynesboro ML	East MS	Waynesboro			Ha	S			Jackson	$100	$127			$2,900	$20
Jones Library	Elizabeth Jones	Grenada	1	1	Gw	S				$100	$129			$4,117	$30
Lafayette Co/Oxfr	First Regional	Oxford			Tu	S			Jackson	$100	$127			$2,900	$20
Chain PL	First Regional	Olive Branch			Mp	I	7	7		$423	$215			$2,900	$20
Davis Pub Lib	First Regional	Southaven			Mp	S	2	0		$872	$166			$2,900	$20
Dye PL	First Regional	Horn Lake			Mp	S	4	0		$872	$166			$2,900	$20
Hernando PL	First Regional	Hernando	12	4	Mp	S	12	10		$1,904	$382			$5,417	$35
Batesville PL	First Regional	Batesville			Gw	S			Jackson	$100	$127			$2,900	$20
Coldwater PL	First Regional	Coldwater			Gw	S	26		Jackson	$100	$147			$2,900	$20
Irwin Library	First Regional	Tunica			Gw	S			Jackson	$100	$127			$2,900	$20
Lapidus Mem PL	First Regional	Crenshaw			Gw	S	18		Jackson	$100	$142			$2,900	$20
Pointer PL	First Regional	Como			Gw	S	14		Jackson	$100	$142			$2,900	$20
Sardis PL	First Regional	Sardis			Gw	S	9		Jackson	$100	$142			$2,900	$20
Senatobia PL	First Regional	Senatobia			Gw	S	22		Jackson	$100	$147			$2,900	$20
Greenwood-LeFlr	Greenwood-Leflore	Greenwood	3	2	Gw	S				$100	$131			$4,117	$30
Itta Bena Branch	Greenwood-Leflore	Itta Bena			Gw	S						$135	$109	$250	
Wilson Branch L	Greenwood-Leflore	Greenwood			Gw	S				$100	$127			$2,900	$20
Bay St. Louis-Han	Hancock County	Bay St. Louis	3	3	Gp	S				$100	$133			$4,117	$30
Kiln Library	Hancock County	Kiln			Gp	S				$100	$127			$2,900	$20
Waveland PL	Hancock County	Waveland			Gp	S				$100	$127			$2,900	$20
Person ML	Harriette Person	Port Gibson	1	1	Jk	S				$100	$129			$4,117	$30
Biloxi Main Lib	Harrison County	Biloxi			Gp	S				$100	$127			$2,900	$20
D'Iberville PL	Harrison County	D'Iberville			Gp	S				$100	$127			$2,900	$20
Division St Stu Ct	Harrison County	Biloxi			Gp	S				$100	$127			$2,900	$20
Gulfport PL	Harrison County	Gulfport	8	8	Gp	S				$200	$270			$5,417	$35
Orange Grove PL	Harrison County	Gulfport			Gp	S				$100	$127			$2,900	$20
Pass Christian PL	Harrison County	Pass Christian			Gp	S				$100	$127			$2,900	$20
Sherry Mem Lib	Harrison County	Biloxi			Gp	S				$100	$127			$2,900	$20
W Biloxi PL	Harrison County	Biloxi			Gp	S				$100	$127			$2,900	$20

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Frame Relay Network Cost Worksheet

										Network (Note 2 and 4)				Equipment	
Library	System	City	# Of Loc.	# Of Dedic Loc	FRelay Node	SB/ IND	SB Mile	Ind Mile	Hub Location	Dedicated Lines Install	Dedicated Lines Recur	Dialup Line Install	Dialup Line Recur	Purchase (Notes 1 and 3)	Maint.
Hattie,Petal&Forr	Hattie, Petal & Forr	Hattiesburg	2	2	Ha	S				$100	$131			$4,117	$30
Petal Library	Hattie, Petal & Forr	Petal			Ha	S				$100	$127			$2,900	$20
Armstrong Lib	Homochitto Valley	Natchez	3	3	Jk	S	28			$100	$153			$4,117	$30
VanCleave ML	Homochitto Valley	Centreville			Jk	S	44			$100	$147			$2,900	$20
Woodville PL	Homochitto Valley	Woodville			Jk	S	55			$100	$157			$2,900	$20
Humphreys Cty L	Humphreys County	Belzoni	2	1	Gw	S				$100	$129			$4,117	$30
Isola PL	Humphreys County	Isola			Gw	I						$135	$109	$250	
George Cty PL	Jackson-George	Lucedale			Ha	S			Jackson	$100	$127			$2,900	$20
East Central PL	Jackson-George	Pascagoula			Gp	S				$100	$127			$2,900	$20
McIlwain PL	Jackson-George	Gautier			Gp	S				$100	$127			$2,900	$20
Moss Point City L	Jackson-George	Moss Point			Gp	S				$100	$127			$2,900	$20
Ocean Springs ML	Jackson-George	Ocean Springs			Gp	S				$100	$127			$2,900	$20
Pascagoula PL	Jackson-George	Pascagoula	8	7	Gp	S				$100	$141			$4,117	$30
St. Martin PL	Jackson-George	Biloxi			Gp	S				$100	$127			$2,900	$20
Vancleave PL	Jackson-George	Vancleave			Gp	S				$100	$127			$2,900	$20
Alexander Lib	Jackson/Hinds	Jackson			Jk	S				$100	$127			$2,900	$20
Austin Library	Jackson/Hinds	Terry			Jk	S				$100	$127			$2,900	$20
Brown Library	Jackson/Hinds	Jackson			Jk	S				$100	$127			$2,900	$20
Colonial Mart Lib	Jackson/Hinds	Jackson			Jk	S				$100	$127			$2,900	$20
Edwards Lib	Jackson/Hinds	Edwards			Jk	S				$100	$127			$2,900	$20
Evers Blvd Br Lib	Jackson/Hinds	Jackson			Jk	S				$100	$127			$2,900	$20
Hamer Library	Jackson/Hinds	Jackson			Jk	S				$100	$127			$2,900	$20
Jeffers Library	Jackson/Hinds	Bolton			Jk	S				$100	$127			$2,900	$20
Majure Library	Jackson/Hinds	Utica			Jk	S				$100	$127			$2,900	$20
Northside Lib	Jackson/Hinds	Jackson			Jk	S				$100	$127			$2,900	$20
Raymond Lib	Jackson/Hinds	Raymond			Jk	S				$100	$127			$2,900	$20
S Hills Lib	Jackson/Hinds	Jackson			Jk	S				$100	$127			$2,900	$20
Welty Library	Jackson/Hinds	Jackson	14	14	Jk	S				$200	$282			$5,417	$35
White Rock Lib	Jackson/Hinds	Jackson			Jk	S				$100	$127			$2,900	$20
Wood Library	Jackson/Hinds	Clinton			Jk	S				$100	$127			$2,900	$20
Hickory PL	Kemper-Newton	Hickory			Tu	S						$135	$71	$250	
Chunky PL	Kemper-Newton	Chunky			Me	S						$135	$55	$250	
DeKalb PL	Kemper-Newton	DeKalb			Me	S			Jackson	$100	$127			$2,900	$20
Scooba PL	Kemper-Newton	Scooba			Me	S						$135	$80	$250	
Decatur PL	Kemper-Newton	Decatur			Jk	I						$135	$126	$250	
McMullan Lib	Kemper-Newton	Newton			Jk	S				$100	$127			$2,900	$20
Union PL	Kemper-Newton	Union	7	3	Jk	S				$100	$133			$4,117	$30
Ellisville PL	Laurel-Jones	Ellisville			Ha	S						$135	$105	$250	
Laurel-Jones Cty	Laurel-Jones	Laurel	3	1	Ha	S				$100	$129			$4,117	$30
Sandersville PL	Laurel-Jones	Sandersville			Ha	S						$135	$105	$250	
Itawamba Cty Pratt	Lee-Itawamba	Fulton			Tu	I						$135	$181	$250	
Lee County Lib	Lee-Itawamba	Tupelo	2	1	Tu	S				$100	$129			$4,117	$30

Figure 15

Frame Relay Network Cost Worksheet

Library	System	City	# Of Loc.	# Of Dedic Loc	FRelay Node	SB/ IND	SB Mile	Ind Mile	Hub Location	Network (Note 2 and 4)				Equipment	
										Dedicated Lines Install	Dedicated Lines Recur	Dialup Line Install	Dialup Line Recur	Purchase	Maint. (Notes 1 and 3)
Bude PL	Lincoln-Lawr-Frankl	Bude			Jk	I	27	15		$590	$286			$2,900	$20
Franklin Cty PL	Lincoln-Lawr-Frankl	Meadville			Jk	I						$135	$168	$250	
Lawrence Cty PL	Lincoln-Lawr-Frankl	Monticello			Jk	S				$100	$127			$2,900	$20
Lincoln Cty PL	Lincoln-Lawr-Frankl	Brookhaven	5	3	Jk	S				$100	$133			$4,117	$30
Newhebron PL	Lincoln-Lawr-Frankl	New Hebron			Jk	I						$135	$168	$250	
Long Beach PL	Long Beach	Long Beach	1	1	Gp	S				$100	$129			$4,117	$30
Caledonia Br Lib	Lowndes County	Caledonia			Tu	S				$100	$127			$2,900	$20
Columbus PL	Lowndes County	Columbus	4	2	Tu	S				$100	$131			$4,117	$30
Crawford Br Lib	Lowndes County	Crawford			Tu	I						$135	$76	$250	
Artesia Br Lib	Lowndes County	Artesia			Me	I						$135	$92	$250	
Flora PL	Madison County	Flora			Jk	S				$100	$127			$2,900	$20
Jurgens Mem Lib	Madison County	Ridgeland			Jk	S				$100	$127			$2,900	$20
Mad Cty-Canton	Madison County	Canton	4	4	Jk	S				$100	$135			$4,117	$30
Madison PL	Madison County	Madison			Jk	S				$100	$127			$2,900	$20
Lambert PL	Marks-Quitman Cty	Lambert			Gw	S						$135	$92	$250	
Marks-Quitman	Marks-Quitman Cty	Marks	3	1	Gw	S	12			$100	$144			$4,117	$30
Sledge PL	Marks-Quitman Cty	Sledge			Gw	S						$135	$105	$250	
Marshall Cty Lib	Marshall County	Holly Springs	3	1	Tu	S				$100	$129			$4,117	$30
Potts Camp Lib	Marshall County	Potts Camp			Tu	S						$135	$126	$250	
French Library	Marshall County	Byhalia			Mp	I						$135	$118	$250	
Meridian-Laud Cty	Meridan-Lauderdale	Meridian	1	1	Me	S				$100	$129			$4,117	$30
Walnut Grove PL	Mid-Mississippi	Walnut Grove			Tu	S			Jackson	$100	$127			$2,900	$20
Attala County Lib	Mid-Mississippi	Kosciusko	13	8	Jk	S				$200	$270			$5,417	$35
Carthage-Leake Cty	Mid-Mississippi	Carthage			Jk	S				$100	$127			$2,900	$20
Durant PL	Mid-Mississippi	Durant			Jk	S				$100	$127			$2,900	$20
Goodman PL	Mid-Mississippi	Goodman			Jk	S				$100	$127			$2,900	$20
Lexington PL	Mid-Mississippi	Lexington			Jk	S				$100	$127			$2,900	$20
Pickens PL	Mid-Mississippi	Pickens			Jk	S				$100	$127			$2,900	$20
Tchula PL	Mid-Mississippi	Tchula			Jk	S				$100	$127			$2,900	$20
Winston County	Mid-Mississippi	Louisville			Jk	S				$100	$127			$2,900	$20
Duck Hill PL	Mid-Mississippi	Duck Hill			Gw	S			Jackson	$100	$127			$2,900	$20
Kilmichael PL	Mid-Mississippi	Kilmichael			Gw	S			Jackson	$100	$127			$2,900	$20
West PL	Mid-Mississippi	West			Gw	S			Jackson	$100	$127			$2,900	$20
Winona-Montgom	Mid-Mississippi	Winona			Gw	S			Jackson	$100	$127			$2,900	$20
Neshoba County	Neshoba County	Philadelphia	1	1	Me	S				$100	$129			$4,117	$30
Allen Library	Northeast Regional	Booneville			Tu	S				$100	$127			$2,900	$20
Belmont PL	Northeast Regional	Belmont			Tu	S				$100	$127			$2,900	$20
Blue Mountain PL	Northeast Regional	Blue Mountain			Tu	S						$135	$84	$250	
Burnsville PL	Northeast Regional	Burnsville			Tu	S				$100	$127			$2,900	$20
Chalybeate PL	Northeast Regional	Walnut			Tu	S						$135	$84	$250	
Corinth PL	Northeast Regional	Corinth	13	9	Tu	S				$200	$272			$5,417	$35
Cox Library	Northeast Regional	Baldwyn			Tu	S				$100	$127			$2,900	$20

Figure 15

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Frame Relay Network Cost Worksheet

										Network (Note 2 and 4)				Equipment	
Library	System	City	# Of Loc.	# Of Dedic Loc	FRelay Node	SB/ IND	SB Mile	Ind Mile	Hub Location	Dedicated Lines Install	Dedicated Lines Recur	Dialup Line Install	Dialup Line Recur	Purchase (Notes 1 and 3)	Maint.
Iuka PL	Northeast Regional	Iuka			Tu	S				$100	$127			$2,900	$20
Marietta PL	Northeast Regional	Marietta			Tu	S				$100	$127			$2,900	$20
McRae Mem Lib	Northeast Regional	Tishomingo			Tu	I						$135	$126	$250	
Rienzi PL	Northeast Regional	Rienzi			Tu	I						$135	$105	$250	
Ripley PL	Northeast Regional	Ripley			Tu	S				$100	$127			$2,900	$20
Walnut PL	Northeast Regional	Walnut			Tu	S				$100	$127			$2,900	$20
Brooksville PL	Noxubee County	Brooksville			Me	S						$135	$105	$250	
Danial Mem Lib	Noxubee County	Shuqualak			Me	S						$135	$105	$250	
Fant Mem Lib	Noxubee County	Macon	3	1	Me	S	9			$100	$144			$4,117	$30
Maben PL	Oktibbeha County	Maben			Tu	S				$100	$127			$2,900	$20
Starkville PL	Oktibbeha County	Starkville	3	3	Tu	S				$100	$133			$4,117	$30
Sturgis PL	Oktibbeha County	Sturgis			Tu	S				$100	$127			$2,900	$20
Crosby Mem Lib	Pearl River	Picayune	2	2	Ha	S	24			$100	$151			$4,117	$30
Poplarville PL	Pearl River	Poplarville			Ha	S				$100	$127			$2,900	$20
Alpha Center Lib	Pike-Amite-Walthall	McComb			Jk	S						$135	$101	$250	
Crosby PL	Pike-Amite-Walthall	Crosby			Jk	I						$135	$101	$250	
Gloster PL	Pike-Amite-Walthall	Gloster			Jk	S	38			$100	$147			$2,900	$20
Liberty PL	Pike-Amite-Walthall	Liberty			Jk	S	29			$100	$147			$2,900	$20
McComb PL	Pike-Amite-Walthall	McComb	9	3	Jk	S	14			$100	$148			$4,117	$30
Progress PL	Pike-Amite-Walthall	McComb			Jk	S						$135	$109	$250	
Magnolia PL	Pike-Amite-Walthall	Magnolia			Ha	S	20		Jackson	$100	$142			$2,900	$20
Osyka PL	Pike-Amite-Walthall	Osyka			Ha	S						$135	$109	$250	
Walthall County	Pike-Amite-Walthall	Tylertown			Ha	S			Jackson	$100	$127			$2,900	$20
Blackwell Mem Lib	Pine Forest	Collins			Ha	S				$100	$127			$2,900	$20
Boyer Mem Lib	Pine Forest	Sumrall			Ha	S				$100	$127			$2,900	$20
Brewer Mem Lib	Pine Forest	Mt. Olive			Ha	S				$100	$127			$2,900	$20
Hall Library	Pine Forest	Petal			Ha	S						$135	$92	$250	
Leakesville PL	Pine Forest	Leakesville			Ha	I						$135	$143	$250	
Lumberton PL	Pine Forest	Lumberton			Ha	S				$100	$127			$2,900	$20
McHenry PL	Pine Forest	McHenry			Ha	S						$135	$92	$250	
McLain PL	Pine Forest	McLain			Ha	S						$135	$92	$250	
New Augusta PL	Pine Forest	New Augusta			Ha	I						$135	$92	$250	
Powell Mem Lib	Pine Forest	Beaumont			Ha	S				$100	$127			$2,900	$20
Purvis PL	Pine Forest	Purvis			Ha	S				$100	$127			$2,900	$20
Richton PL	Pine Forest	Richton	15	8	Ha	S				$200	$270			$5,417	$35
Seminary PL	Pine Forest	Seminary			Ha	S						$135	$105	$250	
State Line PL	Pine Forest	State Line			Ha	I						$135	$92	$250	
Stone County Lib	Pine Forest	Wiggins			Ha	S				$100	$127			$2,900	$20
Ricks Mem Lib	South Delta	Yazoo City	2	2	Jk	S				$100	$131			$4,117	$30
Sharkey-Issaquena	South Delta	Rolling Fork			Jk	S				$100	$127			$2,900	$20
Prentiss PL	South MS Regional	Prentiss			Jk	I						$135	$221	$250	
Bassfield PL	South MS Regional	Bassfield			Ha	I						$135	$168	$2,900	$20

Figure 15

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										Network (Note 2 and 4)				Equipment	
Library	System	City	# Of Loc.	# Of Dedic Loc	FRelay Node	SB/ IND	SB Mile	Ind Mile	Hub Location	Dedicated Lines Install	Dedicated Lines Recur	Dialup Line Install	Dialup Line Recur	Purchase (Notes 1 and 3)	Maint.
Columbia-Marion	South MS Regional	Columbia	3	1	Ha	S				$100	$129			$4,117	$30
Drew PL	Sunflower County	Drew			Gw	S				$100	$127			$2,900	$20
Inverness PL	Sunflower County	Inverness			Gw	S				$100	$127			$2,900	$20
Seymour Library	Sunflower County	Indianola	6	5	Gw	S				$100	$137			$4,117	$30
Sheriff Library	Sunflower County	Moorhead			Gw	S				$100	$127			$2,900	$20
Stansel Library	Sunflower County	Ruleville			Gw	S				$100	$127			$2,900	$20
Sunflower PL	Sunflower County	Sunflower			Gw	I						$135	$80	$250	
Charleston Lib	Tallahatchie Cty	Charleston	4	4	Gw	S				$100	$135			$4,117	$30
Sumner Library	Tallahatchie Cty	Sumner			Gw	S				$100	$127			$2,900	$20
Tutwiler Branch L	Tallahatchie Cty	Tutwiler			Gw	S				$100	$127			$2,900	$20
Webb Library	Tallahatchie Cty	Webb			Gw	S				$100	$127			$2,900	$20
Amory Municipal	Tombigee Regional	Amory			Tu	S				$100	$127			$2,900	$20
Bryan PL	Tombigee Regional	West Point	10	7	Tu	S				$200	$268			$5,417	$35
Choctaw Cty PL	Tombigee Regional	Ackerman			Tu	I						$135	$168	$250	
Evans Mem Lib	Tombigee Regional	Aberdeen			Tu	S				$100	$127			$2,900	$20
Hamilton PL	Tombigee Regional	Hamilton			Tu	S						$135	$118	$250	
Lowe PL	Tombigee Regional	Nettleton			Tu	S				$100	$127			$2,900	$20
Mathiston PL	Tombigee Regional	Mathiston			Tu	S				$100	$127			$2,900	$20
Webster County	Tombigee Regional	Eupora			Tu	S				$100	$127			$2,900	$20
Weir PL	Tombigee Regional	Weir			Tu	S				$100	$127			$2,900	$20
Wren PL	Tombigee Regional	Aberdeen			Tu	S						$135	$118	$250	
Blue Springs Lib	Union County	Blue Springs			Tu	S						$135	$105	$250	
Nance-McNeely L	Union County	Myrtle			Tu	I						$135	$105	$250	
Smith Library	Union County	New Albany	3	1	Tu	S				$100	$129			$4,117	$30
Warren Cty-Vicksb	Warren Cty-Vicksbg	Vicksburg	1	1	Jk	S				$100	$129			$4,117	$30
Glen Allan Lib	Washington Cty	Glen Allen			Jk	I						$135	$126	$250	
Arcola Library	Washington Cty	Arcola			Gw	S				$100	$127			$2,900	$20
Avon Library	Washington Cty	Avon			Gw	S				$100	$127			$2,900	$20
Leland Library	Washington Cty	Leland			Gw	S				$100	$127			$2,900	$20
Percy Mem Lib	Washington Cty	Greenville	6	5	Gw	S				$100	$137			$4,117	$30
Torrey Wood Mem	Washington Cty	Hollandale			Gw	S				$100	$127			$2,900	$20
Coffeeville PL	Yalobusha Cty	Coffeeville	2	1	Tu	S	13			$100	$144			$4,117	$30
Oakland PL	Yalobusha Cty	Oakland			Gw	S						$135	$143	$250	
Sub-Total			241	160				52		$23,930	$25,290	$8,370	$6,773	$609,026	$4,135
Mississippi Library Commission (3 T-1s)										$300	$1,728	$0	$0	$25,147	$406
Inter-Cloud Network Charges										$5,426	$5,127				
Inter-LATA Charges (MCI)										$4,000	$1,065				
Total										$33,656	$33,210	$8,370	$6,773	$634,172	$4,541

Note(s)

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Library	System	City	# Of Loc.	# Of Dedic Loc	FRelay Node	SB/ IND	SB Mile	Ind Mile	Hub Location	Network (Note 2 and 4)				Equipment	
										Dedicated Lines Install	Dedicated Lines Recur	Dialup Line Install	Dialup Line Recur	Purchase	Maint. (Notes 1 and 3)

1

2. Inter-LATA Charges:

Install	500
Per Month	125
Per Mile	1.25

3. Purchase and Maintenence (monthly) cost of network equipment is an estimate.

4. Libraries designated as "dial-up" is based on limited hours of operation (20 or less per week) OR being in a location that is very expensive to reach with a dedicated line. Recurring cost for dial-in assumes library is on-line for one-quarter of the hours it is open.

Inter-cloud Network Cost	Capacity	Network Installation.	Network Recur.
Jackson To Tupelo	1 - T1	$200	$833
Jackson to Greenwood	1 - T1	$200	$783
Jackson to Meridian	2 - 56 kbps	$90	$270
Jackson to Hattiesburg	1 - T1	$200	$783
Jackson to Memphis	1 - 56 kbps	$1,184	$619
Jackson to Gulfport	3 - 56 kbps	$3,552	$1,839
Sub-Total		$5,426	$5,127

56 kbps FRelay access 0 miles	127
56 kbps FRelay access upto 20 miles	142
56 kbps FRelay access upto 50 miles	147
56 kbps FRelay access upto 75 miles	157
Per additional PVC	2
T1 FRelay access 0 miles	526
56 kbps CSU/DSU w/inst.	$1,300
T1 CSU/DSU w/inst.	$2,000
Cisco 1005 w/inst.	$1,600
Cisco 2500 w/inst.	$2,817
Cisco 4500 w/inst.	$15,710
CSU/DSU 56 maintencne (monthly)	$5

Library	System	City	# Of Loc.	# Of Dedic Loc	FRelay Node	SB/ IND	SB Mile	Ind Mile	Hub Location	Network (Note 2 and 4) Dedicated Lines Install	Dedicated Lines Recur	Dialup Line Install	Dialup Line Recur	Equipment Purchase	Maint. (Notes 1 and 3)
CSU/DSU T1 maintencne (monthly)		$10													
Smartnet cisco 2500 (monthly)		$25													
Smartnet cisco 4000 (monthly)		$105													
Smartnet cisco 1005 (monthly)		$15													
Dial-Up Telephone Line (monthly)		42													
Dial-Up Line Install		135													
Dial-Up Line Per Minute Charge		0.07													
Typical Per-Month Dial Minutes		1800													
28.8 Dial Modem		250													

Figure 15

Public/Private Device IP Addressing

System #	Library	System	City	# Of Loc.	# Of Dedic Loc	Bldg ID	Device IP Addresses							
							Public (C#.x - C#.y)			Private (10.S.B.x - 10.S.B.y)				
							CLASS C#	PCs From (x)	PCs To (y)	Ntwk	Sys	Bldg	PCs From (x)	PCs To (y)
1	Bond Memorial	Benton	Ashland	2	2	1	C1	19	30	10	100	1	3	254
1	Hickory Flat PL	Benton	Hickory Flat			2		35	46	10	100	2	3	254
2	Blackmur Mem L	Blackmur	Water Valley	1	1	1	C2	19	30	10	101	1	3	254
3	Robinson-Carpenter	Bolivar	Cleveland	8	5	1	C3	19	30	10	102	1	3	254
3	Cleveland Depot	Bolivar	Cleveland			2		35	46	10	102	2	3	254
3	Field Mem Lib	Bolivar	Shaw			3		51	62	10	102	3	3	254
3	Rosedale PL	Bolivar	Rosedale			4		67	78	10	102	4	3	254
4	Carrollton-N Carr	Carroll County	Carrollton	2	2	1	C4	19	30	10	103	1	3	254
4	Vaiden PL	Carroll County	Vaiden			2		35	46	10	103	2	3	254
5	Pearl PL	Central MS	Pearl	20	13	1	C5	19	30	10	104	1	3	254
5	Sebastopol PL	Central MS	Sebastopol			2		35	46	10	104	2	3	254
5	Brandon PL	Central MS	Brandon			3		51	62	10	104	3	3	254
5	Florence PL	Central MS	Florence			4		67	78	10	104	4	3	254
5	Ford Library	Central MS	Taylorsville			5		83	94	10	104	5	3	254
5	Forest PL	Central MS	Forest			6		99	110	10	104	6	3	254
5	Magee PL	Central MS	Magee			7		115	126	10	104	7	3	254
5	Mendenhall PL	Central MS	Mendenhall			8		131	142	10	104	8	3	254
5	Morton PL	Central MS	Morton			9		147	158	10	104	9	3	254
5	NW Point Resevoir	Central MS	Brandon			10		163	174	10	104	10	3	254
5	Pelahatchie PL	Central MS	Pelahatchie			11		179	190	10	104	11	3	254
5	Richland PL	Central MS	Richland			12		195	206	10	104	12	3	254
5	Robinson Mem L	Central MS	Raleigh			13		211	222	10	104	13	3	254
6	Carnegie PL	Clarksdale-Coahoma	Clarksdale	1	1	1	C6	19	30	10	105	1	3	254
7	Covington Mem	Copiah-Jefferson	Hazelhurst	4	4	1	C7	19	30	10	106	1	3	254
7	Biggs Mem Lib	Copiah-Jefferson	Crystal Springs			2		35	46	10	106	2	3	254
7	Hamilton Mem	Copiah-Jefferson	Wesson			3		51	62	10	106	3	3	254
7	Jefferson Co Lib	Copiah-Jefferson	Fayette			4		67	78	10	106	4	3	254
8	Pontotoc Ctry Lib	Dixie	Pontotoc	8	5	1	C8	19	30	10	107	1	3	254
8	Houston Carnegie	Dixie	Houston			2		35	46	10	107	2	3	254
8	Okolona Carnegie	Dixie	Okolona			3		51	62	10	107	3	3	254
8	Sherman Lib	Dixie	Sherman			4		67	78	10	107	4	3	254
8	Yancy Mem Lib	Dixie	Bruce			5		83	94	10	107	5	3	254
9	Quitman PL	East MS	Quitman	9	2	1	C9	19	30	10	108	1	3	254
9	Stonewall PL	East MS	Stonewall			2		35	46	10	108	2	3	254
9	Bay Springs Mun	East MS	Bay Springs			3		51	62	10	108	3	3	254

Figure 16

Public/Private Device IP Addressing

							Device IP Addresses							
							Public (C#.x - C#.y)			Private (10.S.B.x - 10.S.B.y)				
System #	Library	System	City	# Of Loc.	# Of Dedic Loc	Bldg ID	CLASS C#	PCs From (x)	PCs To (y)	Ntwk	Sys	Bldg	PCs From (x)	PCs To (y)
9	Parker Mem Lib	East MS	Heidelberg			4		67	78	10	108	4	3	254
9	Waynesboro ML	East MS	Waynesboro			5		83	94	10	108	5	3	254
10	Jones Library	Elizabeth Jones	Grenada	1	1	1	C10	19	30	10	109	1	3	254
11	Hernando PL	First Regional	Hernando	12	12	1	C11	19	30	10	110	1	3	254
11	Lafayette Co/Oxfr	First Regional	Oxford			2		35	46	10	110	2	3	254
11	Chain PL	First Regional	Olive Branch			3		51	62	10	110	3	3	254
11	Davis Pub Lib	First Regional	Southaven			4		67	78	10	110	4	3	254
11	Dye PL	First Regional	Horn Lake			5		83	94	10	110	5	3	254
11	Batesville PL	First Regional	Batesville			6		99	110	10	110	6	3	254
11	Coldwater PL	First Regional	Coldwater			7		115	126	10	110	7	3	254
11	Irwin Library	First Regional	Tunica			8		131	142	10	110	8	3	254
11	Lapidus Mem PL	First Regional	Crenshaw			9		147	158	10	110	9	3	254
11	Pointer PL	First Regional	Como			10		163	174	10	110	10	3	254
11	Sardis PL	First Regional	Sardis			11		179	190	10	110	11	3	254
11	Senatobia PL	First Regional	Senatobia			12		195	206	10	110	12	3	254
12	Greenwood-LeFlr	Greenwood-Leflore	Greenwood	3	2	1	C12	19	30	10	111	1	3	254
12	Wilson Branch L	Greenwood-Leflore	Greenwood			2		35	46	10	111	2	3	254
13	Bay St. Louis-Han	Hancock County	Bay St. Louis	3	3	1	C13	19	30	10	112	1	3	254
13	Kiln Library	Hancock County	Kiln			2		35	46	10	112	2	3	254
13	Waveland PL	Hancock County	Waveland			3		51	62	10	112	3	3	254
14	Person ML	Harriette Person	Port Gibson	1	1	1	C14	19	30	10	113	1	3	254
15	Gulfport PL	Harrison County	Gulfport	8	8	1	C15	19	30	10	114	1	3	254
15	Biloxi Main Lib	Harrison County	Biloxi			2		35	46	10	114	2	3	254
15	D'Iberville PL	Harrison County	D'Iberville			3		51	62	10	114	3	3	254
15	Division St Stu Ct	Harrison County	Biloxi			4		67	78	10	114	4	3	254
15	Orange Grove PL	Harrison County	Gulfport			5		83	94	10	114	5	3	254
15	Pass Christian PL	Harrison County	Pass Christian			6		99	110	10	114	6	3	254
15	Sherry Mem Lib	Harrison County	Biloxi			7		115	126	10	114	7	3	254
15	W Biloxi PL	Harrison County	Biloxi			8		131	142	10	114	8	3	254
16	Hattie,Petal&Forr	Hattie, Petal & Forr	Hattiesburg	2	2	1	C16	19	30	10	115	1	3	254
16	Petal Library	Hattie, Petal & Forr	Petal			2		35	46	10	115	2	3	254
17	Armstrong Lib	Homochitto Valley	Natchez	3	3	1	C17	19	30	10	116	1	3	254
17	VanCleave ML	Homochitto Valley	Centreville			2		35	46	10	116	2	3	254
17	Woodville PL	Homochitto Valley	Woodville			3		51	62	10	116	3	3	254
18	Humphreys Cty L	Humphreys County	Belzoni	2	1	1	C18	19	30	10	117	1	3	254
19	Pascagoula PL	Jackson-George	Pascagoula	8	8	1	C19	19	30	10	118	1	3	254

Figure 16

Public/Private Device IP Addressing

System #	Library	System	City	# Of Loc.	# Of Dedic Loc	Bldg ID	Device IP Addresses							
							Public (C#.x - C#.y)			Private (10.S.B.x - 10.S.B.y)				
							CLASS C#	PCs From (x)	PCs To (y)	Ntwk	Sys	Bldg	PCs From (x)	PCs To (y)
19	George Cty PL	Jackson-George	Lucedale			2		35	46	10	118	2	3	254
19	East Central PL	Jackson-George	Pascagoula			3		51	62	10	118	3	3	254
19	Mcilwain PL	Jackson-George	Gautier			4		67	78	10	118	4	3	254
19	Moss Point City L	Jackson-George	Moss Point			5		83	94	10	118	5	3	254
19	Ocean Springs ML	Jackson-George	Ocean Springs			6		99	110	10	118	6	3	254
19	St. Martin PL	Jackson-George	Biloxi			7		115	126	10	118	7	3	254
19	Vancleave PL	Jackson-George	Vancleave			8		131	142	10	118	8	3	254
20	Welty Library	Jackson/Hinds	Jackson	15	15	1	C20	19	30	10	119	1	3	254
20	Alexander Lib	Jackson/Hinds	Jackson			2		35	46	10	119	2	3	254
20	Austin Library	Jackson/Hinds	Terry			3		51	62	10	119	3	3	254
20	Brown Library	Jackson/Hinds	Jackson			4		67	78	10	119	4	3	254
20	Colonial Mart Lib	Jackson/Hinds	Jackson			5		83	94	10	119	5	3	254
20	Edwards Lib	Jackson/Hinds	Edwards			6		99	110	10	119	6	3	254
20	Evers Blvd Br Lib	Jackson/Hinds	Jackson			7		115	126	10	119	7	3	254
20	Hamer Library	Jackson/Hinds	Jackson			8		131	142	10	119	8	3	254
20	Jeffers Library	Jackson/Hinds	Bolton			9		147	158	10	119	9	3	254
20	Majure Library	Jackson/Hinds	Utica			10		163	174	10	119	10	3	254
20	Northside Lib	Jackson/Hinds	Jackson			11		179	190	10	119	11	3	254
20	Raymond Lib	Jackson/Hinds	Raymond			12		195	206	10	119	12	3	254
20	S Hills Lib	Jackson/Hinds	Jackson			13		211	222	10	119	13	3	254
20	White Rock Lib	Jackson/Hinds	Jackson			14		227	238	10	119	14	3	254
20	Wood Library	Jackson/Hinds	Clinton			15		243	254	10	119	15	3	254
21	Union PL	Kemper-Newton	Union	7	3	1	C21	19	30	10	120	1	3	254
21	DeKalb PL	Kemper-Newton	DeKalb			2		35	46	10	120	2	3	254
21	McMullan Lib	Kemper-Newton	Newton			3		51	62	10	120	3	3	254
22	Laurel-Jones Cty	Laurel-Jones	Laurel	3	1	1	C22	19	30	10	121	1	3	254
23	Lee County Lib	Lee-Itawamba	Tupelo	2	1	1	C23	19	30	10	122	1	3	254
24	Lincoln Cty PL	Lincoln-Lawr-Frankl	Brookhaven	5	3	1	C24	19	30	10	123	1	3	254
24	Bude PL	Lincoln-Lawr-Frankl	Bude			2		35	46	10	123	2	3	254
24	Lawrence Cty PL	Lincoln-Lawr-Frankl	Monticello			3		51	62	10	123	3	3	254
25	Long Beach PL	Long Beach	Long Beach	1	1	1	C25	19	30	10	124	1	3	254
26	Columbus PL	Lowndes County	Columbus	4	2	1	C26	19	30	10	125	1	3	254
26	Caledonia Br Lib	Lowndes County	Caledonia			2		35	46	10	125	2	3	254
27	Mad Cty-Canton	Madison County	Canton	4	4	1	C27	19	30	10	126	1	3	254
27	Flora PL	Madison County	Flora			2		35	46	10	126	2	3	254
27	Jurgens Mem Lib	Madison County	Ridgeland			3		51	62	10	126	3	3	254

Figure 16

Public/Private Device IP Addressing

System #	Library	System	City	# Of Loc.	# Of Dedic Loc	Bldg ID	Device IP Addresses							
							Public (C#.x - C#.y)			Private (10.S.B.x - 10.S.B.y)				
							CLASS C#	PCs From (x)	PCs To (y)	Ntwk	Sys	Bldg	PCs From (x)	PCs To (y)
27	Madison PL	Madison County	Madison			4		67	78	10	126	4	3	254
28	Marks-Quitman	Marks-Quitman Cty	Marks	3	1	1	C28	19	30	10	127	1	3	254
29	Marshall Cty Lib	Marshall County	Holly Springs	3	1	1	C29	19	30	10	128	1	3	254
30	Meridian-Laud Cty	Meridan-Lauderdale	Meridian	1	1	1	C30	19	30	10	129	1	3	254
31	Attala County Lib	Mid-Mississippi	Kosciusko	13	13	1	C31	19	30	10	130	1	3	254
31	Walnut Grove PL	Mid-Mississippi	Walnut Grove			2		35	46	10	130	2	3	254
31	Carthage-Leake Cty	Mid-Mississippi	Carthage			3		51	62	10	130	3	3	254
31	Durant PL	Mid-Mississippi	Durant			4		67	78	10	130	4	3	254
31	Goodman PL	Mid-Mississippi	Goodman			5		83	94	10	130	5	3	254
31	Lexington PL	Mid-Mississippi	Lexington			6		99	110	10	130	6	3	254
31	Pickens PL	Mid-Mississippi	Pickens			7		115	126	10	130	7	3	254
31	Tchula PL	Mid-Mississippi	Tchula			8		131	142	10	130	8	3	254
31	Winston County	Mid-Mississippi	Louisville			9		147	158	10	130	9	3	254
31	Duck Hill PL	Mid-Mississippi	Duck Hill			10		163	174	10	130	10	3	254
31	Kilmichael PL	Mid-Mississippi	Kilmichael			11		179	190	10	130	11	3	254
31	West PL	Mid-Mississippi	West			12		195	206	10	130	12	3	254
31	Winona-Montgom	Mid-Mississippi	Winona			13		211	222	10	130	13	3	254
32	Neshoba County	Neshoba County	Philadelphia	1	1	1	C32	19	30	10	131	1	3	254
33	Corinth PL	Northeast Regional	Corinth	13	9	1	C33	19	30	10	132	1	3	254
33	Allen Library	Northeast Regional	Booneville			2		35	46	10	132	2	3	254
33	Belmont PL	Northeast Regional	Belmont			3		51	62	10	132	3	3	254
33	Burnsville PL	Northeast Regional	Burnsville			4		67	78	10	132	4	3	254
33	Cox Library	Northeast Regional	Baldwyn			5		83	94	10	132	5	3	254
33	Iuka PL	Northeast Regional	Iuka			6		99	110	10	132	6	3	254
33	Rienzi PL	Northeast Regional	Rienzi			7		115	126	10	132	7	3	254
33	Ripley PL	Northeast Regional	Ripley			8		131	142	10	132	8	3	254
33	Walnut PL	Northeast Regional	Walnut			9		147	158	10	132	9	3	254
34	Fant Mem Lib	Noxubee County	Macon	3	1	1	C34	19	30	10	133	1	3	254
35	Starkville PL	Oktibbeha County	Starkville	3	3	1	C35	19	30	10	134	1	3	254
35	Maben PL	Oktibbeha County	Maben			2		35	46	10	134	2	3	254
35	Sturgis PL	Oktibbeha County	Sturgis			3		51	62	10	134	3	3	254
36	Crosby Mem Lib	Pearl River	Picayune	2	2	1	C36	19	30	10	135	1	3	254
36	Poplarville PL	Pearl River	Poplarville			2		35	46	10	135	2	3	254
37	McComb PL	Pike-Amite-Walthall	McComb	9	3	1	C37	19	30	10	136	1	3	254
37	Gloster PL	Pike-Amite-Walthall	Gloster			2		35	46	10	136	2	3	254
37	Liberty PL	Pike-Amite-Walthall	Liberty			3		51	62	10	136	3	3	254

Figure 16

							Device IP Addresses							
							Public (C#.x - C#.y)			Private (10.S.B.x - 10.S.B.y)				
System #	Library	System	City	# Of Loc.	# Of Dedic Loc	Bldg ID	CLASS C#	PCs From (x)	PCs To (y)	Ntwk	Sys	Bldg	PCs From (x)	PCs To (y)
37	Magnolia PL	Pike-Amite-Walthall	Magnolia			4		67	78	10	136	4	3	254
37	Walthall County	Pike-Amite-Walthall	Tylertown			5		83	94	10	136	5	3	254
38	Richton PL	Pine Forest	Richton	15	8	1	C38	19	30	10	137	1	3	254
38	Blackwell Mem Lib	Pine Forest	Collins			2		35	46	10	137	2	3	254
38	Boyer Mem Lib	Pine Forest	Sumrall			3		51	62	10	137	3	3	254
38	Brewer Mem Lib	Pine Forest	Mt. Olive			4		67	78	10	137	4	3	254
38	Lumberton PL	Pine Forest	Lumberton			5		83	94	10	137	5	3	254
38	Powell Mem Lib	Pine Forest	Beaumont			6		99	110	10	137	6	3	254
38	Purvis PL	Pine Forest	Purvis			7		115	126	10	137	7	3	254
38	Stone County Lib	Pine Forest	Wiggins			8		131	142	10	137	8	3	254
39	Ricks Mem Lib	South Delta	Yazoo City	2	2	1	C39	19	30	10	138	1	3	254
39	Sharkey-Issaquena	South Delta	Rolling Fork			2		35	46	10	138	2	3	254
40	Columbia-Marion	South MS Regional	Columbia	3	1	1	C40	19	30	10	139	1	3	254
41	Seymour Library	Sunflower County	Indianola	6	5	1	C41	19	30	10	140	1	3	254
41	Drew PL	Sunflower County	Drew			2		35	46	10	140	2	3	254
41	Inverness PL	Sunflower County	Inverness			3		51	62	10	140	3	3	254
41	Sheriff Library	Sunflower County	Moorhead			4		67	78	10	140	4	3	254
41	Stansel Library	Sunflower County	Ruleville			5		83	94	10	140	5	3	254
42	Charleston Lib	Tallahatchie Cty	Charleston	4	4	1	C42	19	30	10	141	1	3	254
42	Sumner Library	Tallahatchie Cty	Sumner			2		35	46	10	141	2	3	254
42	Tutwiler Branch L	Tallahatchie Cty	Tutwiler			3		51	62	10	141	3	3	254
42	Webb Library	Tallahatchie Cty	Webb			4		67	78	10	141	4	3	254
43	Bryan PL	Tombigee Regional	West Point	10	7	1	C43	19	30	10	142	1	3	254
43	Amory Municipal	Tombigee Regional	Amory			2		35	46	10	142	2	3	254
43	Evans Mem Lib	Tombigee Regional	Aberdeen			3		51	62	10	142	3	3	254
43	Lowe PL	Tombigee Regional	Nettleton			4		67	78	10	142	4	3	254
43	Mathiston PL	Tombigee Regional	Mathiston			5		83	94	10	142	5	3	254
43	Webster County	Tombigee Regional	Eupora			6		99	110	10	142	6	3	254
43	Weir PL	Tombigee Regional	Weir			7		115	126	10	142	7	3	254
44	Smith Library	Union County	New Albany	3	1	1	C44	19	30	10	143	1	3	254
45	Warren Cty-Vicksb	Warren Cty-Vicksbg	Vicksburg	1	1	1	C45	19	30	10	144	1	3	254
46	Percy Mem Lib	Washington Cty	Greenville	6	5	1	C46	19	30	10	145	1	3	254
46	Arcola Library	Washington Cty	Arcola			2		35	46	10	145	2	3	254
46	Avon Library	Washington Cty	Avon			3		51	62	10	145	3	3	254
46	Leland Library	Washington Cty	Leland			4		67	78	10	145	4	3	254
46	Torrey Wood Mem	Washington Cty	Hollandale			5		83	94	10	145	5	3	254

Figure 16

Public/Private Device IP Addressing

System #	Library	System	City	# Of Loc.	# Of Dedic Loc	Bldg ID	Device IP Addresses							
							Public (C#.x - C#.y)			Private (10.S.B.x - 10.S.B.y)				
							CLASS C#	PCs From (x)	PCs To (y)	Ntwk	Sys	Bldg	PCs From (x)	PCs To (y)
47	Coffeeville PL	Yalobusha Cty	Coffeeville	2	1	1	C47	19	30	10	146	1	3	254
200	MLC	Jackson	Jackson	1	1	1	MLC	19	30	10	201	1	3	254

Note(s)

1. Dial-up libraries do not appear on this chart; their IP addresses will be assigned dynamically by the MLC system

2. Private addresses reserve 2nd byte numbers 1-100 for other uses
   First byte = 10 (industry standard)
   Second byte = District Number
   Third byte = Building Number
   Fourth byte = Device Number

3. Public scheme see report text, assumes a Class C license (C#.x) for each district

4. MLC Class C address is MLC.MLC.MLC.0

5. **For private address locations:**
   10.S.B.1 is reserved for the Ethernet LAN
   10.S.B.2 is reserved for a building LAN server
   For public address locations:
   Reserved for the router: C#.17, C#.33, C#.49 ... depending on building ID
   Reserved for a building LAN server: C#.18, C#.34, C#.50 ... depending on building ID

6. IP Subnet Mask For Public Scheme Is 255.255.255.240
   IP Subnet Mask For Private Scheme Is 255.255.255.0

7. Building IDs assigned sequentially in each district; building number 1 reserved for HQ

8. Unique System IDs assigned to each district

9. MLC assigned a System ID of 200.

Figure 16

Public/Private WAN IP Addressing

System #	Library	System	City	# Of Loc.	# Of Dedic Loc	Bldg ID	WAN Serial Link IP Addresses							
							Public (CW#.x)			Private (10.99.S.x)				
							CLASS C#	To HQ (Note 1)	To MLC (Note 2)	Ntwk	Sys	Bldg	To HQ (Note 1)	To MLC (Note 2)
1	Bond Memorial	Benton	Ashland	2	2	1	CW1		10	10	99	1		10
1	Hickory Flat PL	Benton	Hickory Flat			2		17		10	99	2	17	
2	Blackmur Mem L	Blackmur	Water Valley	1	1	1	CW2		10	10	99	1		10
3	Robinson-Carpenter	Bolivar	Cleveland	8	5	1	CW3		10	10	99	1		10
3	Cleveland Depot	Bolivar	Cleveland			2		17		10	99	2	17	
3	Field Mem Lib	Bolivar	Shaw			3		25		10	99	3	25	
3	Rosedale PL	Bolivar	Rosedale			4		33		10	99	4	33	
4	Carrollton-N Carr	Carroll County	Carrollton	2	2	1	CW4		10	10	99	1		10
4	Vaiden PL	Carroll County	Vaiden			2		17		10	99	2	17	
5	Pearl PL	Central MS	Pearl	20	13	1	CW5		10	10	99	1		10
5	Sebastopol PL	Central MS	Sebastopol			2		17		10	99	2	17	
5	Brandon PL	Central MS	Brandon			3		25		10	99	3	25	
5	Florence PL	Central MS	Florence			4		33		10	99	4	33	
5	Ford Library	Central MS	Taylorsville			5		41		10	99	5	41	
5	Forest PL	Central MS	Forest			6		49		10	99	6	49	
5	Magee PL	Central MS	Magee			7		57		10	99	7	57	
5	Mendenhall PL	Central MS	Mendenhall			8		65		10	99	8	65	
5	Morton PL	Central MS	Morton			9		73		10	99	9	73	
5	NW Point Resevoir	Central MS	Brandon			10		81		10	99	10	81	
5	Pelahatchie PL	Central MS	Pelahatchie			11		89		10	99	11	89	
5	Richland PL	Central MS	Richland			12		97		10	99	12	97	
5	Robinson Mem L	Central MS	Raleigh			13		105		10	99	13	105	
6	Carnegie PL	Clarksdale-Coahoma	Clarksdale	1	1	1	CW6		10	10	99	1		10
7	Covington Mem	Copiah-Jefferson	Hazelhurst	4	4	1	CW7		10	10	99	1		10
7	Biggs Mem Lib	Copiah-Jefferson	Crystal Springs			2		17		10	99	2	17	
7	Hamilton Mem	Copiah-Jefferson	Wesson			3		25		10	99	3	25	
7	Jefferson Co Lib	Copiah-Jefferson	Fayette			4		33		10	99	4	33	
8	Pontotoc Ctry Lib	Dixie	Pontotoc	8	5	1	CW8		10	10	99	1		10
8	Houston Carnegie	Dixie	Houston			2		17		10	99	2	17	
8	Okolona Carnegie	Dixie	Okolona			3		25		10	99	3	25	
8	Sherman Lib	Dixie	Sherman			4		33		10	99	4	33	
8	Yancy Mem Lib	Dixie	Bruce			5		41		10	99	5	41	
9	Quitman PL	East MS	Quitman	9	2	1	CW9		10	10	99	1		10
9	Stonewall PL	East MS	Stonewall			2		17		10	99	2	17	
9	Bay Springs Mun	East MS	Bay Springs			3		25		10	99	3	25	

Figure 17

Public/Private WAN IP Addressing

System #	Library	System	City	# Of Loc.	# Of Dedic Loc	Bldg ID	WAN Serial Link IP Addresses							
							Public (CW#.x)			Private (10.99.S.x)				
							CLASS C#	To HQ (Note 1)	To MLC (Note 2)	Ntwk	Sys	Bldg	To HQ (Note 1)	To MLC (Note 2)
9	Parker Mem Lib	East MS	Heidelberg			4		33		10	99	4	33	
9	Waynesboro ML	East MS	Waynesboro			5		41		10	99	5	41	
10	Jones Library	Elizabeth Jones	Grenada	1	1	1	CW10		10	10	99	1		10
11	Hernando PL	First Regional	Hernando	12	12	1	CW11		10	10	99	1		10
11	Lafayette Co/Oxfr	First Regional	Oxford			2		17		10	99	2	17	
11	Chain PL	First Regional	Olive Branch			3		25		10	99	3	25	
11	Davis Pub Lib	First Regional	Southaven			4		33		10	99	4	33	
11	Dye PL	First Regional	Horn Lake			5		41		10	99	5	41	
11	Batesville PL	First Regional	Batesville			6		49		10	99	6	49	
11	Coldwater PL	First Regional	Coldwater			7		57		10	99	7	57	
11	Irwin Library	First Regional	Tunica			8		65		10	99	8	65	
11	Lapidus Mem PL	First Regional	Crenshaw			9		73		10	99	9	73	
11	Pointer PL	First Regional	Como			10		81		10	99	10	81	
11	Sardis PL	First Regional	Sardis			11		89		10	99	11	89	
11	Senatobia PL	First Regional	Senatobia			12		97		10	99	12	97	
12	Greenwood-LeFlr	Greenwood-Leflore	Greenwood	3	2	1	CW12		10	10	99	1		10
12	Wilson Branch L	Greenwood-Leflore	Greenwood			2		17		10	99	2	17	
13	Bay St. Louis-Han	Hancock County	Bay St. Louis	3	3	1	CW13		10	10	99	1		10
13	Kiln Library	Hancock County	Kiln			2		17		10	99	2	17	
13	Waveland PL	Hancock County	Waveland			3		25		10	99	3	25	
14	Person ML	Harriette Person	Port Gibson	1	1	1	CW14		10	10	99	1		10
15	Gulfport PL	Harrison County	Gulfport	8	8	1	CW15		10	10	99	1		10
15	Biloxi Main Lib	Harrison County	Biloxi			2		17		10	99	2	17	
15	D'Iberville PL	Harrison County	D'Iberville			3		25		10	99	3	25	
15	Division St Stu Ct	Harrison County	Biloxi			4		33		10	99	4	33	
15	Orange Grove PL	Harrison County	Gulfport			5		41		10	99	5	41	
15	Pass Christian PL	Harrison County	Pass Christian			6		49		10	99	6	49	
15	Sherry Mem Lib	Harrison County	Biloxi			7		57		10	99	7	57	
15	W Biloxi PL	Harrison County	Biloxi			8		65		10	99	8	65	
16	Hattie.Petal&Forr	Hattie, Petal & Forr	Hattiesburg	2	2	1	CW16		10	10	99	1		10
16	Petal Library	Hattie, Petal & Forr	Petal			2		17		10	99	2	17	
17	Armstrong Lib	Homochitto Valley	Natchez	3	3	1	CW17		10	10	99	1		10
17	VanCleave ML	Homochitto Valley	Centreville			2		17		10	99	2	17	
17	Woodville PL	Homochitto Valley	Woodville			3		25		10	99	3	25	
18	Humphreys Cty L	Humphreys County	Belzoni	2	1	1	CW18		10	10	99	1		10
19	Pascagoula PL	Jackson-George	Pascagoula	8	8	1	CW19		10	10	99	1		10

Figure 17

Public/Private WAN IP Addressing

System #	Library	System	City	# Of Loc.	# Of Dedic Loc	Bldg ID	WAN Serial Link IP Addresses							
							Public (CW#.x)			Private (10.99.S.x)				
							CLASS C#	To HQ (Note 1)	To MLC (Note 2)	Ntwk	Sys	Bldg	To HQ (Note 1)	To MLC (Note 2)
19	George Cty PL	Jackson-George	Lucedale			2		17		10	99	2	17	
19	East Central PL	Jackson-George	Pascagoula			3		25		10	99	3	25	
19	Mcllwain PL	Jackson-George	Gautier			4		33		10	99	4	33	
19	Moss Point City L	Jackson-George	Moss Point			5		41		10	99	5	41	
19	Ocean Springs ML	Jackson-George	Ocean Springs			6		49		10	99	6	49	
19	St. Martin PL	Jackson-George	Biloxi			7		57		10	99	7	57	
19	Vancleave PL	Jackson-George	Vancleave			8		65		10	99	8	65	
20	Welty Library	Jackson/Hinds	Jackson	15	15	1	CW20		10	10	99	1		10
20	Alexander Lib	Jackson/Hinds	Jackson			2		17		10	99	2	17	
20	Austin Library	Jackson/Hinds	Terry			3		25		10	99	3	25	
20	Brown Library	Jackson/Hinds	Jackson			4		33		10	99	4	33	
20	Colonial Mart Lib	Jackson/Hinds	Jackson			5		41		10	99	5	41	
20	Edwards Lib	Jackson/Hinds	Edwards			6		49		10	99	6	49	
20	Evers Blvd Br Lib	Jackson/Hinds	Jackson			7		57		10	99	7	57	
20	Hamer Library	Jackson/Hinds	Jackson			8		65		10	99	8	65	
20	Jeffers Library	Jackson/Hinds	Bolton			9		73		10	99	9	73	
20	Majure Library	Jackson/Hinds	Utica			10		81		10	99	10	81	
20	Northside Lib	Jackson/Hinds	Jackson			11		89		10	99	11	89	
20	Raymond Lib	Jackson/Hinds	Raymond			12		97		10	99	12	97	
20	S Hills Lib	Jackson/Hinds	Jackson			13		105		10	99	13	105	
20	White Rock Lib	Jackson/Hinds	Jackson			14		113		10	99	14	113	
20	Wood Library	Jackson/Hinds	Clinton			15		121		10	99	15	121	
21	Union PL	Kemper-Newton	Union	7	3	1	CW21		10	10	99	1		10
21	DeKalb PL	Kemper-Newton	DeKalb			2		17		10	99	2	17	
21	McMullan Lib	Kemper-Newton	Newton			3		25		10	99	3	25	
22	Laurel-Jones Cty	Laurel-Jones	Laurel	3	1	1	CW22		10	10	99	1		10
23	Lee County Lib	Lee-Itawamba	Tupelo	2	1	1	CW23		10	10	99	1		10
24	Lincoln Cty PL	Lincoln-Lawr-Frankl	Brookhaven	5	3	1	CW24		10	10	99	1		10
24	Bude PL	Lincoln-Lawr-Frankl	Bude			2		17		10	99	2	17	
24	Lawrence Cty PL	Lincoln-Lawr-Frankl	Monticello			3		25		10	99	3	25	
25	Long Beach PL	Long Beach	Long Beach	1	1	1	CW25		10	10	99	1		10
26	Columbus PL	Lowndes County	Columbus	4	2	1	CW26		10	10	99	1		10
26	Caledonia Br Lib	Lowndes County	Caledonia			2		17		10	99	2	17	
27	Mad Cty-Canton	Madison County	Canton	4	4	1	CW27		10	10	99	1		10
27	Flora PL	Madison County	Flora			2		17		10	99	2	17	
27	Jurgens Mem Lib	Madison County	Ridgeland			3		25		10	99	3	25	

Figure 17

Public/Private WAN IP Addressing

System #	Library	System	City	# Of Loc.	# Of Dedic Loc	Bldg ID	WAN Serial Link IP Addresses							
							Public (CW#.x)			Private (10.99.S.x)				
							CLASS C#	To HQ (Note 1)	To MLC (Note 2)	Ntwk	Sys	Bldg	To HQ (Note 1)	To MLC (Note 2)
27	Madison PL	Madison County	Madison			4		33		10	99	4	33	
28	Marks-Quitman	Marks-Quitman Cty	Marks	3	1	1	CW28		10	10	99	1		10
29	Marshall Cty Lib	Marshall County	Holly Springs	3	1	1	CW29		10	10	99	1		10
30	Meridian-Laud Cty	Meridan-Lauderdale	Meridian	1	1	1	CW30		10	10	99	1		10
31	Attala County Lib	Mid-Mississippi	Kosciusko	13	13	1	CW31		10	10	99	1		10
31	Walnut Grove PL	Mid-Mississippi	Walnut Grove			2		17		10	99	2	17	
31	Carthage-Leake Cty	Mid-Mississippi	Carthage			3		25		10	99	3	25	
31	Durant PL	Mid-Mississippi	Durant			4		33		10	99	4	33	
31	Goodman PL	Mid-Mississippi	Goodman			5		41		10	99	5	41	
31	Lexington PL	Mid-Mississippi	Lexington			6		49		10	99	6	49	
31	Pickens PL	Mid-Mississippi	Pickens			7		57		10	99	7	57	
31	Tchula PL	Mid-Mississippi	Tchula			8		65		10	99	8	65	
31	Winston County	Mid-Mississippi	Louisville			9		73		10	99	9	73	
31	Duck Hill PL	Mid-Mississippi	Duck Hill			10		81		10	99	10	81	
31	Kilmichael PL	Mid-Mississippi	Kilmichael			11		89		10	99	11	89	
31	West PL	Mid-Mississippi	West			12		97		10	99	12	97	
31	Winona-Montgom	Mid-Mississippi	Winona			13		105		10	99	13	105	
32	Neshoba County	Neshoba County	Philadelphia	1	1	1	CW32		10	10	99	1		10
33	Corinth PL	Northeast Regional	Corinth	13	9	1	CW33		10	10	99	1		10
33	Allen Library	Northeast Regional	Booneville			2		17		10	99	2	17	
33	Belmont PL	Northeast Regional	Belmont			3		25		10	99	3	25	
33	Burnsville PL	Northeast Regional	Burnsville			4		33		10	99	4	33	
33	Cox Library	Northeast Regional	Baldwyn			5		41		10	99	5	41	
33	Iuka PL	Northeast Regional	Iuka			6		49		10	99	6	49	
33	Rienzi PL	Northeast Regional	Rienzi			7		57		10	99	7	57	
33	Ripley PL	Northeast Regional	Ripley			8		65		10	99	8	65	
33	Walnut PL	Northeast Regional	Walnut			9		73		10	99	9	73	
34	Fant Mem Lib	Noxubee County	Macon	3	1	1	CW34		10	10	99	1		10
35	Starkville PL	Oktibbeha County	Starkville	3	3	1	CW35		10	10	99	1		10
35	Maben PL	Oktibbeha County	Maben			2		17		10	99	2	17	
35	Sturgis PL	Oktibbeha County	Sturgis			3		25		10	99	3	25	
36	Crosby Mem Lib	Pearl River	Picayune	2	2	1	CW36		10	10	99	1		10
36	Poplarville PL	Pearl River	Poplarville			2		17		10	99	2	17	
37	McComb PL	Pike-Amite-Walthall	McComb	9	3	1	CW37		10	10	99	1		10
37	Gloster PL	Pike-Amite-Walthall	Gloster			2		17		10	99	2	17	
37	Liberty PL	Pike-Amite-Walthall	Liberty			3		25		10	99	3	25	

Public/Private WAN IP Addressing

System #	Library	System	City	# Of Loc.	# Of Dedic Loc	Bldg ID	WAN Serial Link IP Addresses								
							Public (CW#.x)			Private (10.99.S.x)					
							CLASS C#	To HQ (Note 1)	To MLC (Note 2)	Ntwk	Sys	Bldg	To HQ (Note 1)	To MLC (Note 2)
37	Magnolia PL	Pike-Amite-Walthall	Magnolia			4		33		10	99	4	33	
37	Walthall County	Pike-Amite-Walthall	Tylertown			5		41		10	99	5	41	
38	Richton PL	Pine Forest	Richton	15	8	1	CW38		10	10	99	1		10
38	Blackwell Mem Lib	Pine Forest	Collins			2		17		10	99	2	17	
38	Boyer Mem Lib	Pine Forest	Sumrall			3		25		10	99	3	25	
38	Brewer Mem Lib	Pine Forest	Mt. Olive			4		33		10	99	4	33	
38	Lumberton PL	Pine Forest	Lumberton			5		41		10	99	5	41	
38	Powell Mem Lib	Pine Forest	Beaumont			6		49		10	99	6	49	
38	Purvis PL	Pine Forest	Purvis			7		57		10	99	7	57	
38	Stone County Lib	Pine Forest	Wiggins			8		65		10	99	8	65	
39	Ricks Mem Lib	South Delta	Yazoo City	2	2	1	CW39		10	10	99	1		10
39	Sharkey-Issaquena	South Delta	Rolling Fork			2		17		10	99	2	17	
40	Columbia-Marion	South MS Regional	Columbia	3	1	1	CW40		10	10	99	1		10
41	Seymour Library	Sunflower County	Indianola	6	5	1	CW41		10	10	99	1		10
41	Drew PL	Sunflower County	Drew			2		17		10	99	2	17	
41	Inverness PL	Sunflower County	Inverness			3		25		10	99	3	25	
41	Sheriff Library	Sunflower County	Moorhead			4		33		10	99	4	33	
41	Stansel Library	Sunflower County	Ruleville			5		41		10	99	5	41	
42	Charleston Lib	Tallahatchie Cty	Charleston	4	4	1	CW42		10	10	99	1		10
42	Sumner Library	Tallahatchie Cty	Sumner			2		17		10	99	2	17	
42	Tutwiler Branch L	Tallahatchie Cty	Tutwiler			3		25		10	99	3	25	
42	Webb Library	Tallahatchie Cty	Webb			4		33		10	99	4	33	
43	Bryan PL	Tombigee Regional	West Point	10	7	1	CW43		10	10	99	1		10
43	Amory Municipal	Tombigee Regional	Amory			2		17		10	99	2	17	
43	Evans Mem Lib	Tombigee Regional	Aberdeen			3		25		10	99	3	25	
43	Lowe PL	Tombigee Regional	Nettleton			4		33		10	99	4	33	
43	Mathiston PL	Tombigee Regional	Mathiston			5		41		10	99	5	41	
43	Webster County	Tombigee Regional	Eupora			6		49		10	99	6	49	
43	Weir PL	Tombigee Regional	Weir			7		57		10	99	7	57	
44	Smith Library	Union County	New Albany	3	1	1	CW44		10	10	99	1		10
45	Warren Cty-Vicksb	Warren Cty-Vicksbg	Vicksburg	1	1	1	CW45		10	10	99	1		10
46	Percy Mem Lib	Washington Cty	Greenville	6	5	1	CW46		10	10	99	1		10
46	Arcola Library	Washington Cty	Arcola			2		17		10	99	2	17	
46	Avon Library	Washington Cty	Avon			3		25		10	99	3	25	
46	Leland Library	Washington Cty	Leland			4		33		10	99	4	33	
46	Torrey Wood Mem	Washington Cty	Hollandale			5		41		10	99	5	41	

Figure 17

Public/Private WAN IP Addressing

System #	Library	System	City	# Of Loc.	# Of Dedic Loc	Bldg ID	WAN Serial Link IP Addresses							
							Public (CW#.x)			Private (10.99.S.x)				
							CLASS C#	To HQ (Note 1)	To MLC (Note 2)	Ntwk	Sys	Bldg	To HQ (Note 1)	To MLC (Note 2)
47	Coffeeville PL	Yalobusha Cty	Coffeeville	2	1	1	CW47		10	10	99	1		10
200	MLC	Jackson	Jackson	1	1	1	ISP		10	10	99	1		10

Note(s)

1. The WAN serial link IP address from HQ to branch library is one higher than that from the branch library to the HQ. This is true for both public and private addresses.
2. The WAN serial link IP address from MLC to HQ is one lower (9) than that from the HQ to the MLC. This is true for both public and private addresses.
3. Public scheme: see report text; assumes a Class C license (CW#.x) for each district WAN links to branches and MLC.
4. MLC to ISP link uses Class C address provided by ISP.
5. 10.99.Sys is the first three bytes of the private address.
6. IP Subnet Mask For Public and Private Scheme Is 255.255.255.248
7. Building IDs assigned sequentially in each district; building number 1 reserved for HQ
8. Unique System IDs assigned to each district
9. MLC assigned a System ID of 200

MLC Library Network Router Configurations

```
! Cisco 1005 configuration at Branch Library
hostname BranchXX
enable password xyz
service password-encryption
ip domain-name lib.ms.us
ip name-server x.y.z.w
! This is the actual IP address of the domain name server
!
Interface Ethernet0
desc main LAN - Contact Person's name; Phone # xxx-yyy-zzzz
ip address C#.xxx  255.255.255.240
! Note: C# represents the first three bytes (C.C.C) of a Class C address. xxx represents the
! first device on the library's subnet (xxx= bldg#*16+1). Each subnet supports 14 devices.
! The first two device id's are reserved for Ethernet interface and a LAN server.
no shut
! Serial Port 0
interface s 0
encap frame-relay ietf
no ip address
!
interface s 0.1 point-to-point
frame-relay interface-dlci PVCtoHQ# broadcast ietf
! PVCtoHQ# is assigned by Bell South and connects to the HQ.
ip address CW#.x 255.255.255.248
! CW# represents the first three bytes of a Class C address used to represent the point to point
! serial link between the branch library and the HQ. The Class C address is subnetted
! to support 32 serial links from HQ and 6 devices per subnet. Subnets 2 thru 31 are used to
! connect branch libraries to it'sHQ. Device 1 represents the branch library end of the serial
! link, device 2 represents the HQ end of the link, devices 3 and 4 can be used for SNMP
! manageable CSU/DSU in the future. The value of x can be calculated as follows: x=bldg#*8+1
! next hop address (to HQ) is CW#.y where y=x+1
bandwidth 56
! Serial Port 1 - Not used
interface s 1
no ip address
shut
!
! The statements below provide static routes to other subnets within this libraries Class C via
! the serial link to the HQ. One ip route statement for each subnet within the class C is required
! except for the subnet of the Ethernet port. A total of 14 ip route statement is needed.
ip route C#.16  255.255.255.240. s 0.1
.
ip route C#.240  255.255.255.240. s 0.1
!  Default route is to the HQ
ip default gateway CW#.y
!
line con 0
exec-timeout 0 0
password pqr
login
line vty 0 4
password lmn
login
```

Figure 18, Page 1

MLC Library Network Router Configurations

```
! Cisco 2501 configuration at HQ
hostname HQXX
enable password xyz
service password-encryption
ip domain-name lib.ms.us
ip name-server x.y.z.w
! This is the actual IP address of the domain name server
Interface Ethernet0
desc main LAN - Contact Person's name; Phone # xxx-yyy-zzzz
ip address C#.17 255.255.255.240
! Note: C# represents the first three bytes (C.C.C) of a Class C address. 17 represents the
! Ethernet port on the HQ's subnet (xxx= bldg#*16+1). Each subnet supports 14 devices.
! The first two device id's are reserved for Ethernet interface and a LAN server.
no shut
! Serial Port 0
interface s 0
encap frame-relay ietf
no ip address
!
! Sub interfaces (DLCIs) on Serial Port 0 to connect to branch libraries and MLC.
interface s 0.1 point-to-point
frame-relay interface-dlci PVCtoBR#1 broadcast ietf
!  PVCtoBR#1 is assigned by Bell South. This PVC connects to the first branch library.
ip address CW#.y 255.255.255.248
! CW# represents the first three bytes of a Class C address used to represent the point to point
! serial links between the branch library and the HQ, and between HQ and MLC. The Class C
! address is subnetted  to support 32 serial links and 6 devices per subnet. Subnet 1 is used for
! serial links from HQ to MLC. Subnets 2 thru 31  is used to link branch libraries to the HQ.
! Device 1 on the subnet represents the distant serial port from the HQ and device 2 represents
! the HQ end of the link.  Devices 3 and 4 can be used for  SNMP manageable CSU/DSU in the
! future. The value of y can be calculated as follows: y=bldg#*8+2
! next hop address (to branch library) is CW#.x where x=y-1 and to MLC it is CW#.9
bandwidth 56

! Repeat the above 4 statements for each branch library substituting for the library number
!
! Connection from HQ to MLC
interface s 0.x point-to-point
frame-relay interface-dlci PVCtoMLC broadcast ietf
ip address CW#.10 2555.255.255.248
bandwidth 56
!
! (Note: For HQs with the need for a second  serial line the next 3 lines has to be replaced by
! repeating the serial port 0 definition above substituting interface number 1 for 0.
interface s 1
no ip address
shut
!
! The statements below provide static routes to other subnets within this HQ's Class C via
! the serial link to the libraries. One ip route statement for each subnet within the class C
! is required except for the subnet of the Ethernet port at HQ. A total of 14 ip route statement
! is needed.
ip route C#.16  255.255.255.240  s 0.1
ip route C#.32  255.255.255.240  s 0.2
```

Figure 18, Page 2

MLC Library Network Router Configurations

```
ip route C#.48  255.255.255.240. s 0.3
.

.

.
!  Default route is to the MLC
ip default gateway CW#.9
!
line con 0
exec-timeout 0 0
password pqr
login
line vty 0 4
password lmn
login
!
```

Figure 18, Page 3

MLC Library Network Router Configurations

```
! Cisco 4500 configuration at MLC
hostname MLC
enable password xyz
service password-encryption
ip domain-name lib.ms.us
ip name-server x.y.z.w
! This is the actual IP address of the domain name server
Interface Ethernet0
desc main LAN - Contact Person's name; Phone # xxx-yyy-zzzz
ip address MLC#.17 255.255.255.240
! Note: MLC# represents the first three bytes (C.C.C) of a Class C address for
! MLC. 17 represents  the address of the first Ethernet port as device 1 on subnet 1.
! Adress 18 - 30 can be allocated to the various servers (e.g. DNS, WEB, Data Base, etc.)
! and PCs on this subnet.
no shut
!
Interface Ethernet1
desc Internal LAN - Contact Person's name; Phone # xxx-yyy-zzzz
ip address MLC#.33 255.255.255.240
! Note: MLC# represents the first three bytes (C.C.C) of a Class C address for
! MLC. 33 represents  the address of the second Ethernet port as device 1 on subnet 2.
! Adress 34 - 46 can be allocated to the various servers (e.g. Novell) and  PCs on
! this subnet.
no shut
! Serial Port 0
interface s 0
encap frame-relay ietf
no ip address
! Sub Interfaces (DLCIs) on Serial Port 0 - used to connect to HQs.
interface s 0.1 point-to-point
frame-relay interface-dlci PVCtoHQ#1 broadcast ietf
!  PVCtoHQ#1 is assigned by Bell South. This PVC connects to the first HQ.
ip address CW#1.9 255.255.255.248
! CW#1 represents the first three bytes of a Class C address used to represent the point to point
! serial links between the branch library and HQ#1, and between MLC and HQ#1. The Class C
! address is subnetted to support 32 serial links and 6 devices per subnet. Subnet 1 is used for
! the serial link between the HQ and MLC.  Device 1 represents the MLC end of the serial link,
! device 2 represents the HQ end of the link, devices 3 and 4 can be used for  SNMP manageable
! CSU/DSU in the future.
! next hop address (to HQ#1) is CW#1.10
bandwidth 56

!  Repeat the following 4 statements for each HQ designated by x:
interface s 0.x point-to-point
frame-relay interface-dlci PVCtoHQ#x broadcast ietf
ip address CW#x.9 2555.255.255.248
! next hop address (to HQ#x) is CW#x.10
bandwidth 56
!
! Serial Port 1
interface s 1
encap frame-relay ietf
no ip address
```

MLC Library Network Router Configurations

```
!
! Sub interfaces (DLCIs) on Serial Port 1 to connect to HQs.
interface s 1.1 point-to-point
frame-relay interface-dlci PVCtoHQ#x broadcast ietf
!  PVCtoHQ#x is assigned by Bell South. This PVC connects to the HQ.
ip address CW#x.9 255.255.255.248
! next hop address (to HQ#x) is CW#x.10
bandwidth 56
!
! Repeat the above 4 statements for rest of HQs.
!
! Serial Port 2 - To ISP
interface s 1
encap frame-relay ietf
no ip address
!
! Sub interfaces (DLCIs) on Serial Port 1 to connect to ISP.
interface s 1.1 point-to-point
frame-relay interface-dlci PVCtoISP broadcast ietf
!  PVCtoISP is assigned by Bell South. This PVC connects to the ISP.
ip address ISP.ISP.ISP.xxx 255.255.255.0
! Class C Address ISP.ISP.ISP.xxx provided by ISP.
bandwidth 56
!
! Static route to HQ's and Libraries. Class C subnets are summarized and static route points
! to a sub-interface. The sub interface is defined by serial port # x and sub interface y. An ip
! route statement is needed per summarized class C. Note: Subnets within a Class C address
! must not be split across multiple HQs.
ip route C#.0  255.255.255.0  s x.y
.
ip default gateway ISP.ISP.ISP.yyy
!
line con 0
exec-timeout 0 0
password pqr
login
line vty 0 4
password lmn
login
!
```

Figure 18, Page 5

ATTACHMENTS

MISSISSIPPI LIBRARY COMMISSION
COMPUTER SURVEY

1) How many computers do you have in your library?

For patron use:	_______ computers
For staff use:	_______ computers
Total:	_______ computers

If known, please indicate the kind of processor in your PC:

# of PCs	Type
_____	Mackintosh/other Apple (Model) __________
_____	286 or older (AT.8088)
_____	386
_____	486 or Pentium
_____	Unknown

2) Are any of your computers connected together in a network, or does each computer operate separately?

_____ Network _____ Separate

If networked, how many computers are connected? _____

3) Do any of your computers have a modem connected to them, to allow you to dial up into another system?

_____ Yes _____ No _____ Unknown

If yes, please indicate the speed of your newest/fastest modem, if known (circle one).

1200 2400 9600 14.4 28.8 Unknown

Attachment 1

4) What kinds of information do you look up on your computer(s)? (Check all that apply)

☐ Catalog ☐ Serials ☐ Reference

5) Where is this information stored? (Check all that apply)

☐ On my computer (CD-ROM, etc.)
☐ On another computer outside my library, located in ____________________

6) If you checked "On another computer", how do you access this other computer?

☐ I use a modem to dial them up
☐ I'm connected to them all the time, using a dedicated line

7) Do you use FAX to transmit information? (Check all that apply)

Type of Information	Sent to:
☐ Search results	☐ Other libraries
☐ Short articles	☐ Patrons
☐ Other	☐ Other libraries
________________	________________
________________	________________
________________	________________

Survey Results

			Pop		Hrs/		Computers					PC		Info			Access		FAX Type			Sent To			
Library	System	City	Served	Group	Week	HQ	Patron	Staff	Old	386	486+	Ntwk	Modem	Cat	Ser	Ref	Local	Connect	Ser	Art	Oth	Sys	Patr	Oth Li	Other
Bond Memorial	Benton	Ashland	8,046	I	45	x	0	1	1			N	2400	X					X	X	X		X	X	
Hickory Flat PL	Benton	Hickory Flat			40		0	0				N													
Blackmur Mem L	Blackmur	Water Valley	3,610	IV	40	x		1				N	Y												
Benoit Public Lib	Bolivar	Benoit			8																				
Cleveland Depot	Bolivar	Cleveland			52		3				3	N	N			X	X		X	X	X	X	X	X	
Field Mem Lib	Bolivar	Shaw			28		0	0																	
Gunnison PL	Bolivar	Gunnison			8																				
Robinson-Carpenter	Bolivar	Cleveland	41,875	III	60	x	8	10	4	1	8	N	14 4	X	X	X	X	Modem	X	X	X	X	X	X	X
Rosedale PL	Bolivar	Rosedale			28		0	0																	
Shelby PL	Bolivar	Shelby			28•		0	0																	
Rayner ML	Bolivar	Merigold			8																				
Carnegie PL	Clarksdale-Coahoma	Clarksdale	31,665	II	48 5	x	0	2	2			N	2400				X								
Carrollton-N Carr	Carroll County	Carrollton	9,237	I	40	x	0	1				N	Y												
Vaiden PL	Carroll County	Vaiden			26		0	0				N													
Brandon PL	Central MS	Brandon			50																				
D'Lo PL	Central MS	D'Lo			10																				
Ford Library	Central MS	Taylorsville			37 5																				
Florence PL	Central MS	Florence			41 5																				
Robinson Mem L	Central MS	Raleigh			37 5																				
Forest PL	Central MS	Forest			45 5																				
Harrisville PL	Central MS	Harrisville			12																				
Lake PL	Central MS	Lake			9																				
Magee PL	Central MS	Magee			48 5																				
Mendenhall PL	Central MS	Mendenhall			44																				
Mize PL	Central MS	Mize			8																				
Morton PL	Central MS	Morton			37 5																				
NW Point Resevoir	Central MS	Brandon			40 5																				
Pearl PL	Central MS	Pearl	150,049	IV	57	x	20	6	15	3	7	N	Y	X		X	X								
Pelahatchie PL	Central MS	Pelahatchie			23																				
Polkville PL	Central MS	Morton			12																				
Puckett PL	Central MS	Puckett			15																				
Richland PL	Central MS	Richland			50																				
Sandhill PL	Central MS	Sandhill			23																				
Sebastopol PL	Central MS	Sebastopol			24																				
Covington Mem	Copiah-Jefferson	Hazelhurst	36,245	II	40	x	2	4	1		5	Y	14 4	X			X		X	X	ILL	X		X	X
Biggs Mem Lib	Copiah-Jefferson	Crystal Springs			41 5		1	2		1	2	Y	?	X			X		X	X	Rpts	X			X
Jefferson Co Lib	Copiah-Jefferson	Fayette			35		1	1			2	Y	?	X			X		X		Rpts	X			
Hamilton Mem	Copiah-Jefferson	Wesson			19 5		0	1			1	N	?	X			X		X		Rpts	X			
Calhoun City PL	Dixie	Calhoun			30			1			1	N	N	X	X	X									
Edmondson ML	Dixie	Vardaman			30			1			1	N	N	X	X	X									
Houlka PL	Dixie	Houlka			11			1			1	N	N	X	X	X									
Houston Carnegie	Dixie	Houston			30		1	1			2	N	N	X	X	X									

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BEST COPY AVAILABLE

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Attachment 2

			Pop		Hrs/		Computers					PC		Info			Access		FAX Type			Sent To			
Library	System	City	Served	Group	Week	HQ	Patron	Staff	Old	386	486+	Ntwk	Modem	Cat	Ser	Ref	Local	Connect	Ser	Art	Oth	Sys	Patr	Oth Li	Other
Yancy Mem Lib	Dixie	Bruce			33		1	2		1	2	N	N	X	X	X									
Okolona Carnegie	Dixie	Okolona			35		1	1			2	N	N	X	X	X									
Pontotoc Cty Lib	Dixie	Pontotoc	55,230	III	52	x	4	5			9	Y	2400	X	X	X									
Sherman Lib	Dixie	Sherman			16			1			1	N	N	X	X	X									
Bay Springs Mun	East MS	Bay Springs			44		0	1			1	N	?	X		X	X								
Clarke Cty-Quitman	East MS	Quitman	53,944	III	52	x																			
Dial-A-Book East	East MS	Quitman			42.5																				
Enterprise PI	East MS	Enterprise			9																				
Louin PL	East MS	Louin			9																				
Parker Mem Lib	East MS	Heidelberg			24		0	1	1			N	N				X								
Pachuta PL	East MS	Pachuta			9																				
Quitman PI	East MS	Quitman			52																				
Shubuta PI	East MS	Shubuta			9																				
Stonewall PL	East MS	Stonewall			20		0	1			1	N	N												
Waynesboro ML	East MS	Waynesboro			49		1	1	1		1	N	N			X	X			X	X	X	X	X	
Jones Library	Elizabeth Jones	Grenada	21,555	II	45	x	2	3			5	Dy	Y	X	X	X	X								
Chain PL	First Regional	Olive Branch			48		4		1	1	2	Dy	9600	X				Dedic	X	X	X	X	X	X	
Batesville PL	First Regional	Batesville			48.5		3				3	Dy	9600	X	X	X	X	Dedic	X	X	X	X	X	X	
Coldwater PL	First Regional	Coldwater			22		1				1	Dy	19.2	X				Dedic	X	X		X			
Pointer PL	First Regional	Como			26		1				1	Dy	9600	X	X	X	X	Dedic	X	X	X	X	X	X	
Hernando PL	First Regional	Hernando	159,328	IV	51.5	x	5	10	5	3	7	Dy	9600	X	X	X	X	Dedic	X	X	X	X	X	X	
Lafayette Co/Oxfr	First Regional	Oxford			58		3	1		1	2	Dy	9600	X	X	X	X	Dedic	X	X	X	X	X	X	
Davis Pub Lib	First Regional	Southaven			51		6	1	4	1	2	Dy	9600	X	X	X	X	Dedic	X	X	X	X	X	X	
Dye PL	First Regional	Horn Lake			48		3	1	2		2	Dy	9600	X				Dedic	X	X	X	X	X	X	
Irwin Library	First Regional	Tunica			46		3				3	Dy	9600	X		X	X	Dedic	X	X		X	X		
Lapidus Mem PL	First Regional	Crenshaw			20		1				1	Dy	9600	X				Dedic	X	X		X			
Sardis PL	First Regional	Sardis			40.5		1				1	Dy	9600	X				Dedic	X	X	X	X	X		
Senatobia PL	First Regional	Senatobia			48.5		2	1			3	Dy	9600	X				Dedic	X	X	X	X	X	X	
Greenwood-LeFlr	Greenwood-Leflore	Greenwood	37,341	II	60	x	0	7	3	3	1	4	2400	X	X	X	X			X	X				Vendors
Itta Bena Branch	Greenwood-Leflore	Itta Bena			16																				
Wilson Branch L	Greenwood-Leflore	Greenwood			34																				
Bay St Louis-Han	Hancock County	Bay St Louis	31,760	II	49	x	0	6	2	3	1	Soon	14.4	X	X	X	X	Dedic	X	X	X	X	X	X	Business
Kiln Library	Hancock County	Kiln			30		0	0				Dy	9600	X	X	X		Dial	X	X		X	X	X	
Waveland PI	Hancock County	Waveland			30		0	0				Dy		X	X	X		Dedic	X	X	X	X	X	X	X
Person ML	Harriette Person	Port Gibson	11,370	I	44.5	x	1	2	1		2	N	2400			X	X			X			X		
Biloxi Main Lib	Harrison County	Biloxi			24		Incl w/ W Biloxi																		
D'Iberville PL	Harrison County	D'Iberville			51		Incl w/ W Biloxi																		
Division St Stu Ct	Harrison County	Biloxi			57																				
Gulfport PL	Harrison County	Gulfport	165,365	IV	60	x	5	15	6	4	10	Circ	9600	X	X	X	X	Soon	X	X	X	X	X	X	
Sherry Mem Lib	Harrison County	Biloxi			43		Incl w/ W Biloxi											Dedic							
Orange Grove PL	Harrison County	Gulfport			45		Incl w/ Gulfport											Line							
Pass Christian PL	Harrison County	Pass Christian			53.5		1	2	2		1	N	?	X			X	Sys	X	X		X	X	X	

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			Pop		Hrs/		Computers					PC		Info			Access		FAX Type			Sent To			
Library	System	City	Served	Group	Week	HQ	Patron	Staff	Old	386	486+	Ntwk	Modem	Cat	Ser	Ref	Local	Connect	Ser	Art	Oth	Sys	Patr	Oth Li	Other
W Biloxi PL	Harrison County	Biloxi			54		2	12	7	1	7	Circ	9600	X	X	X	X		X	X		X	X	X	
Armstrong Lib	Homochitto Valley	Natchez	45,034	III	48	x	3	3	1	3	2	N	9600												
VanCleave ML	Homochitto Valley	Centreville			43.5		0	0				N													
Woodville PL	Homochitto Valley	Woodville			43.5		0	0				N													
Humphreys Cty L	Humphreys County	Belzoni	12,134	I	41	x	0	2	1		1	N	2400	X	X	X	X		X	X			X	X	
Isola PL	Humphreys County	Isola			16		0	0				N													
East Central PL	Jackson-George	Pascagoula			48		Incl w/ Pascagoula																		
McIlwain PL	Jackson-George	Gautier			60		Incl w/ Pascagoula																		
George Cty PL	Jackson-George	Lucedale			47		Incl w/ Pascagoula																		
Moss Point City L	Jackson-George	Moss Point			60		Incl w/ Pascagoula																		
Ocean Springs ML	Jackson-George	Ocean Springs			60		Incl w/ Pascagoula																		
Pascagoula PL	Jackson-George	Pascagoula	131,916	IV	60	x	13	49		4	58	all	28.8	X		X		Other	X	X		X	X	X	
St. Martin PL	Jackson-George	Biloxi			48		Incl w/ Pascagoula																		
Vancleave PL	Jackson-George	Vancleave			48		Incl w/ Pascagoula																		
Wood Library	Jackson/Hinds	Clinton			65																				
Jeffers Library	Jackson/Hinds	Bolton			20																				
Brown Library	Jackson/Hinds	Jackson			48																				
Colonial Mart Lib	Jackson/Hinds	Jackson			51																				
Edwards Lib	Jackson/Hinds	Edwards			20																				
Austin Library	Jackson/Hinds	Terry			20																				
Welty Library	Jackson/Hinds	Jackson	254,441	IV	64	x	58	65	45	5	17	Y	14.4 (5)	X		X	X	56 kbs				X		X	
Majure Library	Jackson/Hinds	Utica			20																				
Hamer Library	Jackson/Hinds	Jackson			35																				
Alexander Lib	Jackson/Hinds	Jackson			52																				
Evers Blvd Br Lib	Jackson/Hinds	Jackson			58																				
Northside Lib	Jackson/Hinds	Jackson			60																				
Raymond Lib	Jackson/Hinds	Raymond			45																				
S Hills Lib	Jackson/Hinds	Jackson			65																				
White Rock Lib	Jackson/Hinds	Jackson			35																				
Chunky PL	Kemper-Newton	Chunky			3		0	0				N	N												
DeKalb PL	Kemper-Newton	DeKalb			36		0	1			1	N	N												
Decatur PL	Kemper-Newton	Decatur			20		0	1			1	N	N												
Hickory PL	Kemper-Newton	Hickory			7		0	0				N	N												
McMullan Lib	Kemper-Newton	Newton			41		0	2			2	N	N												
Scooba PL	Kemper-Newton	Scooba			9		0	1			1	N	N												
Union PL	Kemper-Newton	Union	30,647	II	45	x	0	3			3	N	14.4	X		X	X				X			X	X
Ellisville PL	Laurel-Jones	Ellisville			15			1		1		N	2400	X				Dial							
Laurel-Jones Cty	Laurel-Jones	Laurel	62,031	III	50.5	x	2	5	1	4	2	VAX	2400	X			X								
L-J Dial-A-Book	Laurel-Jones	Laurel			7.5																				
Sandersville PL	Laurel-Jones	Sandersville			15			1		1		N	2400	X				Dial							
Itawamba Cty Pratt	Lee-Itawamba	Fulton			33																				
Lee County Lib	Lee-Itawamba	Tupelo	85,598	IV	60	x	2	4	4	1	1	Y	2400	X	X	X	X		X	X	X	X	X	X	

			Pop		Hrs/		Computers					PC		Info			Access		FAX Type			Sent To			
Library	**System**	**City**	**Served**	**Group**	**Week**	**HQ**	**Patron**	**Staff**	**Old**	**386**	**486+**	**Ntwk**	**Modem**	**Cat**	**Ser**	**Ref**	**Local**	**Connect**	**Ser**	**Art**	**Oth**	**Sys**	**Patr**	**Oth Li**	**Other**
Lee-Itawamba Lib	Lee-Itawamba	Tupelo			17.5																				
Bude PL	Lincoln-Lawr-Frankl	Bude			40		0	1			1	N	2400	X			X								
Franklin Cty PL	Lincoln-Lawr-Frankl	Meadville			30		0	2			2	N	2400	X		X	X								
Lawrence Cty PL	Lincoln-Lawr-Frankl	Monticello			52		0	1			1	N	2400	X		X	X			X		X			
Lincoln Cty PL	Lincoln-Lawr-Frankl	Brookhaven	51,113	III	56	x	1	6		1	6	Y	14.4	X		X	X			X		X	X	X	
Newhebron PL	Lincoln-Lawr-Frankl	New Hebron			30		0	1			1	N	2400	X			X								
Long Beach PL	Long Beach	Long Beach	15,804	IV	34	x	9	7				Y	Y	X		X	X				X	X			X
Artesia Br Lib	Lowndes County	Artesia			12																				
Caledonia Br Lib	Lowndes County	Caledonia			20							Dy													
Columbus PL	Lowndes County	Columbus	59,308	III	58	x	1	4	1	2	2	Dy	14.4	X		X	X	X			X				
Crawford Br Lib	Lowndes County	Crawford			8																				
Jurgens Mem Lib	Madison County	Ridgeland			52		4	1	1	1	2	N		X	X	X		Dedic	X	X		X			
Flora PL	Madison County	Flora			20		1	0																	
Mad Cty-Canton	Madison County	Canton	53,794	III	50.5	x	1	7	1	1	6	N	14.4	X	X	X		Dedic	X	X	X	X	X	X	Business
Madison PL	Madison County	Madison			48		0	1				N	9600	X	X	X		Dedic	X	X		X			
Lambert PL	Marks-Quitman Cty	Lambert			12		0	0																	
Marks-Quitman	Marks-Quitman Cty	Marks	10,490	I	48	x	0	1	1			N	Y												
Sledge PL	Marks-Quitman Cty	Sledge			15		0	0																	
Marshall Cty Lib	Marshall County	Holly Springs	30,361	II	54	x	0	2		2		N	?	X		X	X		X	X	Rpts		X	X	MLC
Potts Camp Lib	Marshall County	Potts Camp			20																				
French Library	Marshall County	Byhalia			18																				
Mailibrary	Meridian-Lauderdale	Meridian			42.5		0	0				N													
Meridian-Laud Cty	Meridian-Lauderdale	Meridian	75,555	IV	66	x	1	6				N	9600						X	X		X	X	X	
Attala County Lib	Mid-Mississippi	Kosciusko	90,342	IV	53	x	3	11	5		8	N	14.4	X	X	X	X		X	X	X	X	X	X	X
Carthage-Leake Cty	Mid-Mississippi	Carthage			44		0	0											X	X	X	X	X	X	X
Duck Hill PL	Mid-Mississippi	Duck Hill			20		0	0											X	X	X	X	X	X	X
Durant PL	Mid-Mississippi	Durant			45		1	0			1	N	N	X		X	X		X	X	X	X	X	X	X
Goodman PL	Mid-Mississippi	Goodman			20		0	0											X	X	X	X	X	X	X
Kilmichael PL	Mid-Mississippi	Kilmichael			20		0	0											X	X	X	X	X	X	X
Lexington PL	Mid-Mississippi	Lexington			47		1	0	1			N	N						X	X	X	X	X	X	X
Pickens PL	Mid-Mississippi	Pickens			31		1	0	1			N	N						X	X	X	X	X	X	X
Tchula PL	Mid-Mississippi	Tchula			31		2	0	2			N	N				X		X	X	X	X	X	X	X
Walnut Grove PL	Mid-Mississippi	Walnut Grove			29																				
West PL	Mid-Mississippi	West			20		0	0																	
Winona-Montgom	Mid-Mississippi	Winona			45		1	0			1	N	N	X		X			X	X	X	X	X	X	X
Winston County	Mid-Mississippi	Louisville			43		2	1	2		1	N	N	X		X	X		X	X	X	X	X	X	X
Neshoba County	Neshoba County	Philadelphia	24,800	II	47	x	4	1	2 App	1	1	N	9600	X	X	X	X				X	X	X	X	
Cox Library	Northeast Regional	Baldwyn			40																				
Belmont PL	Northeast Regional	Belmont			26																				
Blue Mountain PL	Northeast Regional	Blue Mountain			10																				
Burnsville PL	Northeast Regional	Burnsville			30																				
Chalybeate PL	Northeast Regional	Walnut			10																				

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Attachment 2

			Pop		Hrs/		Computers					PC		Info			Access		FAX Type			Sent To			
Library	System	City	Served	Group	Week	HQ	Patron	Staff	Old	386	486+	Ntwk	Modem	Cat	Ser	Ref	Local	Connect	Ser	Art	Oth	Sys	Patr	Oth Li	Other
Corinth PL	Northeast Regional	Corinth	92,206	IV	60	x	0	2		1	1	N	2400	X			X		X	X		X	X		
Allen Library	Northeast Regional	Booneville			51																				
Iuka PL	Northeast Regional	Iuka			55		1	1	1		1	N	14.4	X		X	X				X	X	X		
McRae Mem Lib	Northeast Regional	Tishomingo			20																				
Marietta PL	Northeast Regional	Marietta			32.5																				
Rienzi PL	Northeast Regional	Rienzi			15																				
Ripley PL	Northeast Regional	Ripley			54		0	1		1		N	N			X	X			X	X	X	X		
Walnut PL	Northeast Regional	Walnut			24																				
Fant Mem Lib	Noxubee County	Macon	12,604	I	40	x	1	1		1	1	N	?	X		X	X								
Brooksville PL	Noxubee County	Brooksville			15*		0	0																	
Danial Mem Lib	Noxubee County	Shuqualak			15		0	0																	
Maben PL	Oktibbeha County	Maben			40																				
Starkville PL	Oktibbeha County	Starkville	38,375	II	50	x	15	4		1	8	Y	9600	X		X	X	Dedic??	X	X	Rpts	X	X	X	
Sturgis PL	Oktibbeha County	Sturgis			20																				
Crosby Mem Lib	Pearl River	Picayune	38,714	II	47	x	1	5		3	3	N	14.4	X			X			X	Mail	X		X	Vend
Poplarville PL	Pearl River	Poplarville			35		0~	1	1			N	2400	X			X	Dedic			Stat	X			
Alpha Center Lib	Pike-Amite-Walthall	McComb			14		0	0																	
Crosby PL	Pike-Amite-Walthall	Crosby			14		1	0			1	N	N	X			X								
Gloster PL	Pike-Amite-Walthall	Gloster			30		1	0			1	N	N	X		X	X								
Liberty PL	Pike-Amite-Walthall	Liberty			30		1	0			1	N	N	X		X	X			X	X	X			Public
Magnolia PL	Pike-Amite-Walthall	Magnolia			30		1	0			1	N	N	X		X	X								
McComb PL	Pike-Amite-Walthall	McComb	64,562	III	58	x	1	4	2		3	N	2400	X	X	X	X	Dial	X	X	X	X		X	Public
Osyka PL	Pike-Amite-Walthall	Osyka			16		1	0			1	N	N	X		X	X								
Progress PL	Pike-Amite-Walthall	McComb			16		1	0			1	N	N	X		X	X								
Walthall County	Pike-Amite-Walthall	Tylertown			47		2	0	1		1	N	N	X		X	X			X	X	X			Public
Hall Library	Pine Forest	Petal			12		1				1		14.4	X			X		X	X	X	X	X	X	
Brewer Mem Lib	Pine Forest	Mt. Olive			20.5		1				1		14.4	X			X		X	X	X	X	X	X	
Bower Mem Lib	Pine Forest	Sumrall			30		2	2		1	3	Y	14.4	X			X		X	X	X	X	X	X	
Leakesville PL	Pine Forest	Leakesville			24		3				3	Y	14.4	X			X		X	X	X	X	X	X	
Lumberton PL	Pine Forest	Lumberton			42.5		2	2		1	3	Y	14.4	X			X		X	X	X	X	X	X	
McHenry PL	Pine Forest	McHenry			12		1				1		14.4	X			X		X	X	X	X	X	X	
McLain PL	Pine Forest	McLain			12		1				1		14.4	X			X		X	X	X	X	X	X	
New Augusta PL	Pine Forest	New Augusta			12		1				1		14.4	X			X		X	X	X	X	X	X	
Purvis PL	Pine Forest	Purvis			45.5		2	2		1	3	Y	14.4	X			X		X	X	X	X	X	X	
Blackwell Mem Lib	Pine Forest	Collins			45.5		2	2		1	3	Y	14.4	X			X		X	X	X	X	X	X	
Richton PL	Pine Forest	Richton	78,786	IV	53	x	1	9			10	Y	14.4	X			X		X	X	X	X	X	X	
Seminary PL	Pine Forest	Seminary			15		1				1		14.4	X			X		X	X	X	X	X	X	
State Line PL	Pine Forest	State Line			12		1				1		14.4	X			X		X	X	X	X	X	X	
Stone County Lib	Pine Forest	Wiggins			48		2	2		1	3		14.4	X			X		X	X	X	X	X	X	
Powell Mem Lib	Pine Forest	Beaumont			20		1				1	Y	14.4	X			X		X	X	X	X	X	X	
Ricks Mem Lib	South Delta	Yazoo City	34,481	II	46	x	0	2				Dy	9600	X											
Sharkey-Issaquena	South Delta	Rolling Fork			47		0	2	2			N	Y												

			Pop		Hrs/		Computers					PC		Info			Access		FAX Type			Sent To			
Library	System	City	Served	Group	Week	HQ	Patron	Staff	Old	386	486+	Ntwk	Modem	Cat	Ser	Ref	Local	Connect	Ser	Art	Oth	Sys	Patr	Oth Li	Other
Bassfield PL	South MS Regional	Bassfield			30		0	0				Galx		X	X			Dedic	X	X		X	X	X	
Columbia-Marion	South MS Regional	Columbia	39,595	II	56	x	0	4		1	3	Y	9600	X	X		X	Dial	X	X		X	X	X	
Prentiss PL	South MS Regional	Prentiss			42.5		0	0				Galx		X	X			Dedic	X	X		X	X	X	
Drew PL	Sunflower County	Drew			30																				
Seymour Library	Sunflower County	Indianola	35,129	II	42	x	8	7	10		2	Y	?	X		X	X			X	X	X		X	X
Stansel Library	Sunflower County	Ruleville			28		2		2?			PALS	N												
Inverness PL	Sunflower County	Inverness			20																				
Penitentiary Lib	Sunflower County	Parchman						1	Apple			N	N												
Sheriff Library	Sunflower County	Moorhead			25																				
Sunflower PL	Sunflower County	Sunflower			9.																				
Charleston Lib	Tallahatchie Cty	Charleston	15,210	I	32	x	0	1	1			N	2400								Rpts			X	MLC
Sumner Library	Tallahatchie Cty	Sumner			24		0	0																	
Tutwiler Branch L	Tallahatchie Cty	Tutwiler			24		0	0																	
Webb Library	Tallahatchie Cty	Webb			24		0	0																	
Hattie,Petal&Forr	Hattie, Petal & Forr	Hattiesburg	68,314	III	60	x	65	24			89	89	14.4	X	X	X	X	Dedic			X	X	X	X	Bus
Mail Library	Hattie, Petal & Forr	Hattiesburg																DRANET							
Petal Library	Hattie, Petal & Forr	Petal			49		8	3			11	11	14.4	X	X	X	X	Dedic STL			X	X	X	X	Bus
Amory Municipal	Tombigee Regional	Amory			48		2			1	1	N	Y		X	X	X			X	X	X	X	X	X
Bryan PL	Tombigee Regional	West Point	76,995	IV	52	x	2	4		1	3	N	2400	X	X	X	X			X	X	X		X	X
Choctaw Cty PL	Tombigee Regional	Ackerman			30		0	0																	
Evans Mem Lib	Tombigee Regional	Aberdeen			44.5		2	1		1	2	N	14.4		X	X	X	Dial		X		X			
Hamilton PL	Tombigee Regional	Hamilton			18		0	0																	
Mathiston PL	Tombigee Regional	Mathiston			30		0	0																	
Lowe PL	Tombigee Regional	Nettleton			20		0	0																	
Mail-A-Book	Tombigee Regional	West Point			15																				
Webster County	Tombigee Regional	Eupora			30		0	0																	
Weir PL	Tombigee Regional	Weir			20		0	0																	
Wren PL	Tombigee Regional	Aberdeen			18																				
Blue Springs Lib	Union County	Blue Springs			15																				
Smith Library	Union County	New Albany	22,085	II	51.5	x	1	2		1	2	N	2400			X	X								
Nance-McNeely L	Union County	Myrtle			15																				
Warren Cty-Vicksb	Warren Cty-Vicksbg	Vicksburg	47,880	III	60	x	2	7	3		6+4	Soon	14.4	X	X		X			X			X	X	
Arcola Library	Washington Cty	Arcola			20		0	0																	
Avon Library	Washington Cty	Avon			20		0	0																	
Glen Allan Lib	Washington Cty	Glen Allen			20		0	0																	
Leland Library	Washington Cty	Leland			49		0	0																	
Torrey Wood Mem	Washington Cty	Hollandale			20		0	0																	
Percy Mem Lib	Washington Cty	Greenville	67,935	III	59	x	0	3	3			N	14.4		X		X			X				X	
Coffeeville PL	Yalobusha Cty	Coffeeville	12,033	I	29	x	0	2	2			N	2400				X				X	X			Public
Oakland PL	Yalobusha Cty	Oakland			24																				

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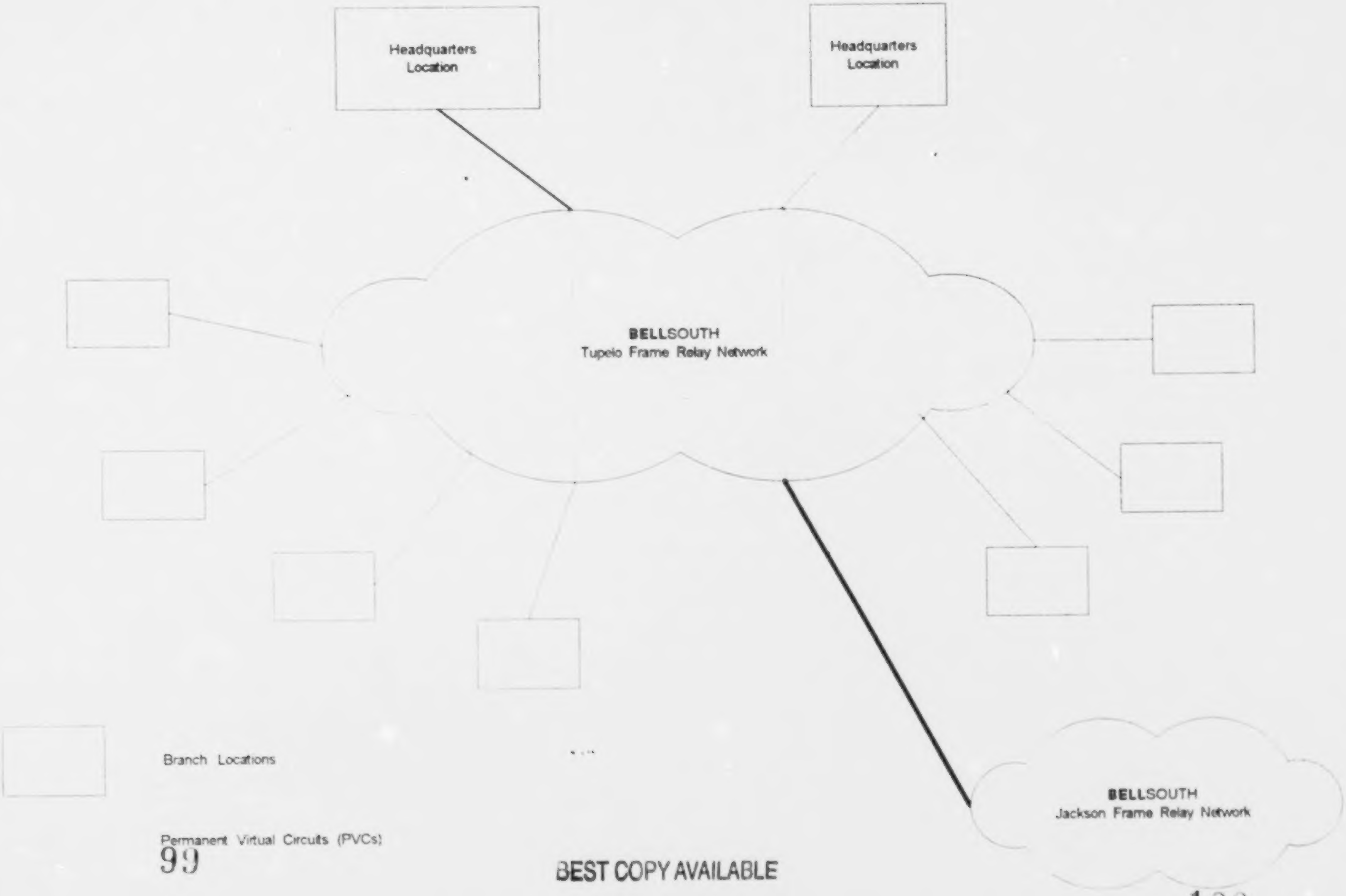
Option 1 - Headquarters location as Switching Hubs


Headquarters Location
Headquarters Location
BELLSOUTH
Tupelo Frame Relay Network
BELLSOUTH
Jackson Frame Relay Network
Branch Locations
Permanent Virtual Circuits (PVCs)

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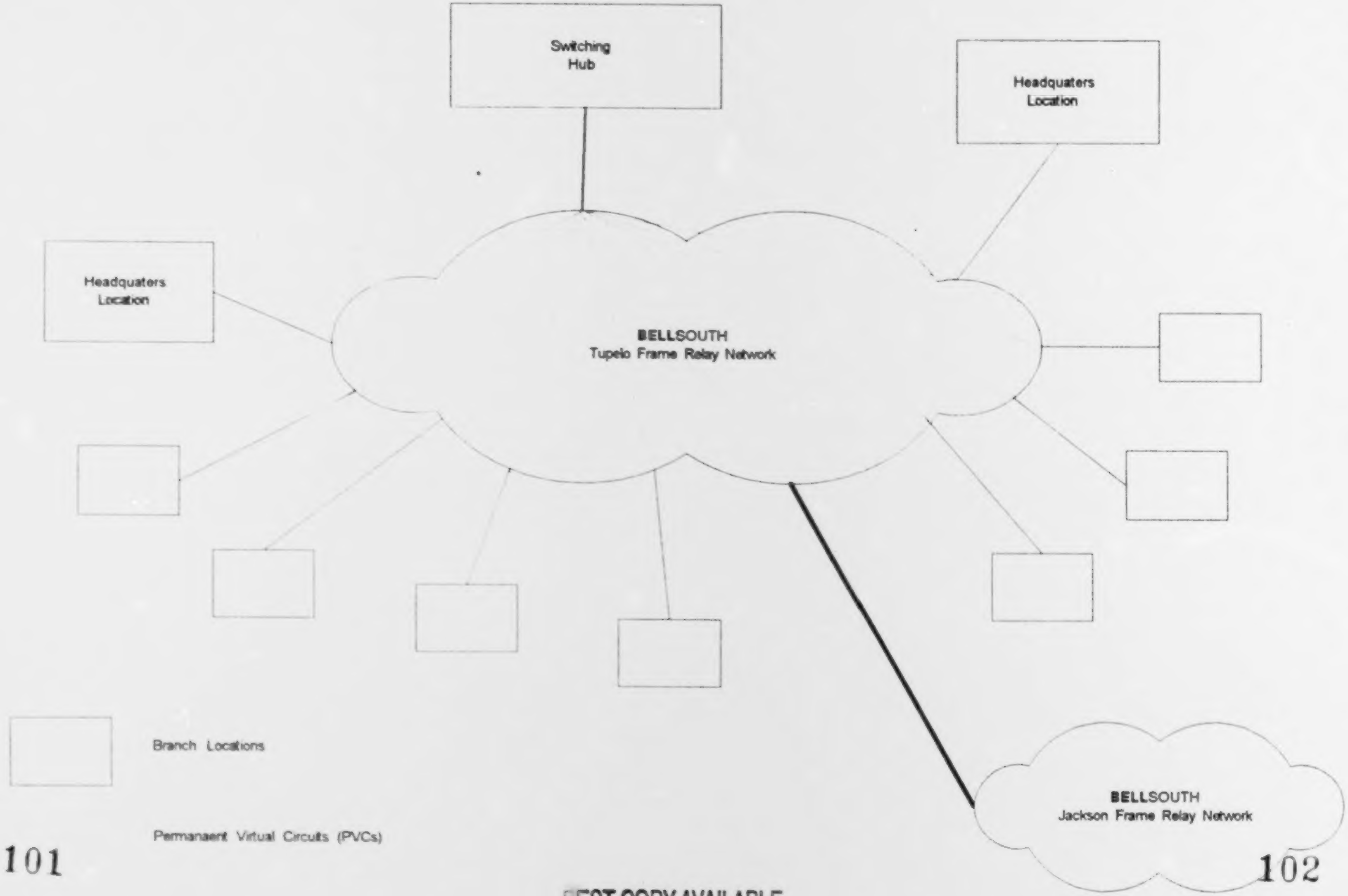
Option 2 - Single Switching Hub per BellSouth Frame Relay Network


Switching Hub
Headquaters Location
Headquaters Location
BELLSOUTH Tupelo Frame Relay Network
BELLSOUTH Jackson Frame Relay Network
Branch Locations
Permanaent Virtual Circuits (PVCs)

101

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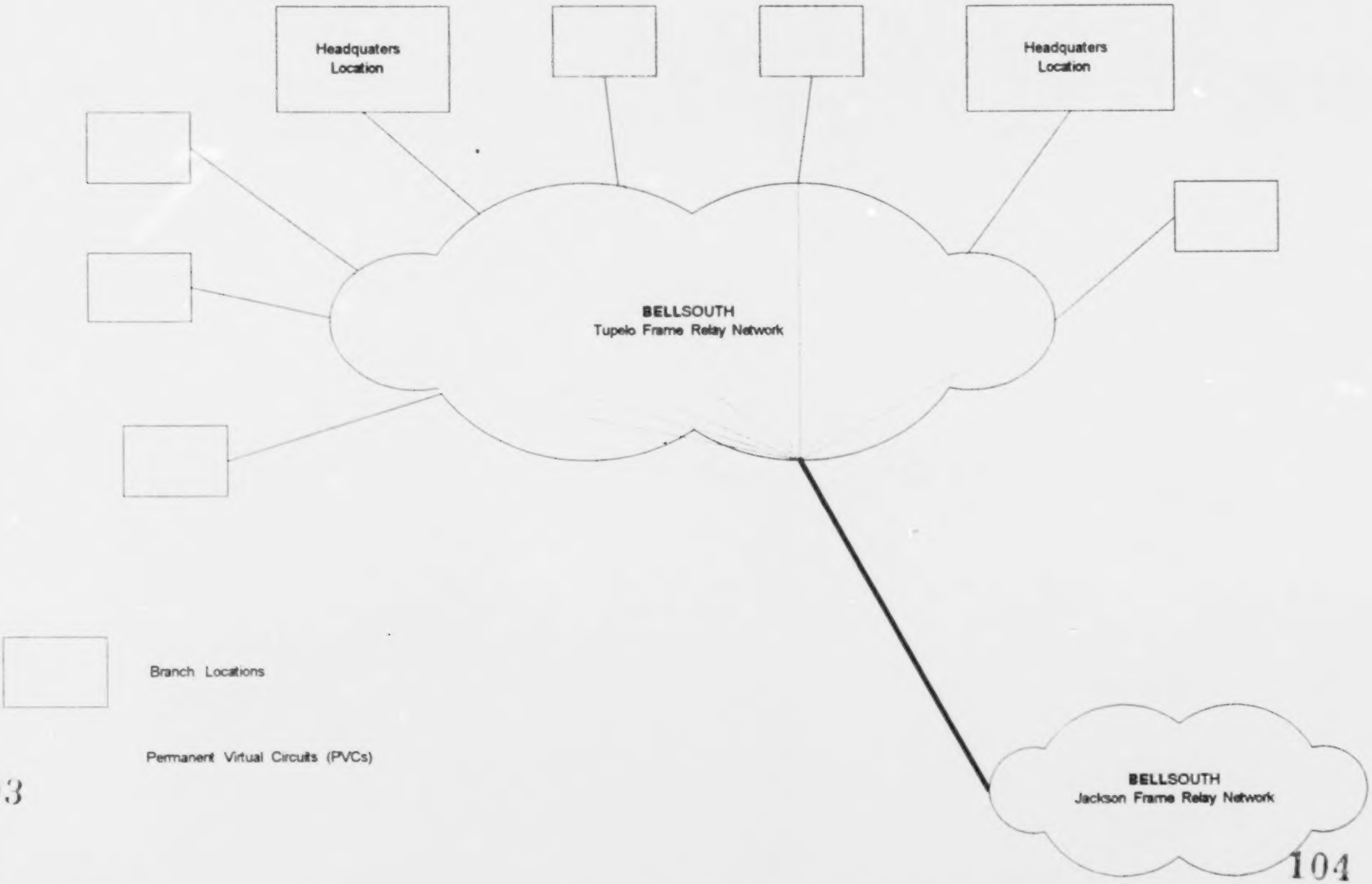
Option 3 - Centralized Switching at Jackson MLC



Headquaters Location

Headquaters Location

BELLSOUTH
Tupelo Frame Relay Network

BELLSOUTH
Jackson Frame Relay Network

Branch Locations

Permanent Virtual Circuits (PVCs)

Network Connectivity Options

								Network (Note 2				Equip (Opt 1/2/3)	
Library	System	City	# Of Loc.	FRelay Node	SB/ IND	SB Mile	Ind Mile	Opt 1/2/3 Installation. (Note 1)	Option 1 Recur.	Option 2 Recur.	Option 3 Recur.	Opt 1/2/3 Purchase (Notes 1 and 3)	Opt 1/2/3 Maint.
Bond Memorial	Benton	Ashland	2	Tu	S			$90	$131	$127	$127	$4,500	$30
Hickory Flat PL	Benton	Hickory Flat		Tu	S			$90	$127	$127	$127	$4,500	$30
Blackmur Mem L	Blackmur	Water Valley	1	Tu	S			$90	$129	$127	$127	$4,500	$30
Benoit Public Lib	Bolivar	Benoit		Gw	S			$90	$127	$127	$127	$4,500	$30
Robinson-Carpenter	Bolivar	Cleveland	8	Gw	S			$90	$143	$622	$127	$4,500	$30
Cleveland Depot	Bolivar	Cleveland		Gw	S			$90	$127	$127	$127	$4,500	$30
Gunnison PL	Bolivar	Gunnison		Gw	S			$90	$127	$127	$127	$4,500	$30
Rayner ML	Bolivar	Merigold		Gw	I	8	5	$90	$142	$142	$142	$4,500	$30
Rosedale PL	Bolivar	Rosedale		Gw	S			$90	$127	$127	$127	$4,500	$30
Field Mem Lib	Bolivar	Shaw		Gw	S			$90	$127	$127	$127	$4,500	$30
Shelby PL	Bolivar	Shelby		Gw	S			$90	$127	$127	$127	$4,500	$30
Carrollton-N Carr	Carroll County	Carrollton	2	Gw	S			$90	$131	$127	$127	$4,500	$30
Vaiden PL	Carroll County	Vaiden		Gw	S			$90	$127	$127	$127	$4,500	$30
Brandon PL	Central MS	Brandon		Jk	S			$90	$127	$127	$127	$4,500	$30
NW Point Resevoir	Central MS	Brandon		Jk	S			$90	$127	$127	$127	$4,500	$30
D'Lo PL	Central MS	D'Lo		Jk	S			$90	$127	$127	$127	$4,500	$30
Florence PL	Central MS	Florence		Jk	I	9	8	$90	$142	$142	$142	$4,500	$30
Forest PL	Central MS	Forest		Jk	S			$90	$127	$127	$127	$4,500	$30
Harrisville PL	Central MS	Harrisville		Jk	S			$90	$127	$127	$127	$4,500	$30
Lake PL	Central MS	Lake		Jk	S			$90	$127	$127	$127	$4,500	$30
Magee PL	Central MS	Magee		Jk	S			$90	$127	$127	$127	$4,500	$30
Mendenhall PL	Central MS	Mendenhall		Jk	S			$90	$127	$127	$127	$4,500	$30
Mize PL	Central MS	Mize		Jk	S			$90	$127	$127	$127	$4,500	$30
Morton PL	Central MS	Morton		Jk	S			$90	$127	$127	$127	$4,500	$30
Polkville PL	Central MS	Morton		Jk	S			$90	$127	$127	$127	$4,500	$30
Pearl PL	Central MS	Pearl	20	Jk	S			$90	$294	$674	$127	$4,500	$30
Pelahatchie PL	Central MS	Pelahatchie		Jk	S			$90	$127	$127	$127	$4,500	$30
Puckett PL	Central MS	Puckett		Jk	S			$90	$127	$127	$127	$4,500	$30
Robinson Mem L	Central MS	Raleigh		Jk	S			$90	$127	$127	$127	$4,500	$30
Richland PL	Central MS	Richland		Jk	S			$90	$127	$127	$127	$4,500	$30
Sandhill PL	Central MS	Sandhill		Ha	I	11	6	$90	$142	$142	$142	$4,500	$30
Sebastopol PL	Central MS	Sebastopol		Me	S			$90	$127	$127	$127	$4,500	$30
Ford Library	Central MS	Taylorsville		Jk	S			$90	$127	$127	$127	$4,500	$30
Carnegie PL	Clarksdale-Coahoma	Clarksdale	1	Gw	S			$90	$129	$127	$127	$4,500	$30
Biggs Mem Lib	Copiah-Jefferson	Crystal Springs		Jk	S			$90	$127	$127	$127	$4,500	$30

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Library	System	City	# Of Loc.	FRelay Node	SB/ IND	SB Mile	Ind Mile	Opt 1/2/3 Installation. (Note 1)	Option 1 Recur.	Option 2 Recur.	Option 3 Recur.	Opt 1/2/3 Purchase (Notes 1 and 3)	Opt 1/2/3 Maint.
Jefferson Co Lib	Copiah-Jefferson	Fayette		Jk	S	13		$90	$142	$142	$142	$4,500	$30
Covington Mem	Copiah-Jefferson	Hazelhurst	4	Jk	S			$90	$135	$127	$127	$4,500	$30
Hamilton Mem	Copiah-Jefferson	Wesson		Jk	S			$90	$127	$127	$127	$4,500	$30
Yancy Mem Lib	Dixie	Bruce		Tu	I	20	9	$90	$142	$142	$142	$4,500	$30
Calhoun City PL	Dixie	Calhoun		Tu	I	18	8	$90	$142	$142	$142	$4,500	$30
Houlka PL	Dixie	Houlka		Tu	I	10	6	$90	$142	$142	$142	$4,500	$30
Houston Carnegie	Dixie	Houston		Tu	S			$90	$127	$127	$127	$4,500	$30
Okolona Carnegie	Dixie	Okolona		Tu	S			$90	$127	$127	$127	$4,500	$30
Pontotoc Ctry Lib	Dixie	Pontotoc	8	Tu	S			$90	$143	$127	$127	$4,500	$30
Sherman Lib	Dixie	Sherman		Tu	S			$90	$127	$127	$127	$4,500	$30
Edmondson ML	Dixie	Vardaman		Tu	I	11	9	$90	$142	$142	$142	$4,500	$30
Bay Springs Mun	East MS	Bay Springs		Jk	I	13	5	$90	$142	$142	$142	$4,500	$30
Enterprise PL	East MS	Enterprise		Me	S			$90	$127	$127	$127	$4,500	$30
Parker Mem Lib	East MS	Heidelberg		Ha	S			$90	$127	$127	$127	$4,500	$30
Louin PL	East MS	Louin		Jk	I	16	8	$90	$142	$142	$142	$4,500	$30
Pachuta PL	East MS	Pachuta		Me	S			$90	$127	$127	$127	$4,500	$30
Quitman PL	East MS	Quitman	11	Me	S			$90	$276	$288	$127	$4,500	$30
Clarke Cty-Quitman	East MS	Quitman		Me	S			$90	$127	$127	$127	$4,500	$30
Dial-A-Book East	East MS	Quitman		Me	S			$90	$127	$127	$127	$4,500	$30
Shubuta PL	East MS	Shubuta		Ha	S			$90	$127	$127	$127	$4,500	$30
Stonewall PL	East MS	Stonewall		Me	S			$90	$127	$127	$127	$4,500	$30
Waynesboro ML	East MS	Waynesboro		Ha	S			$90	$127	$127	$127	$4,500	$30
Jones Library	Elizabeth Jones	Grenada	1	Gw	S			$90	$129	$127	$127	$4,500	$30
Batesville PL	First Regional	Batesville		Gw	S			$90	$127	$127	$127	$4,500	$30
Coldwater PL	First Regional	Coldwater		Gw	S	26		$90	$147	$147	$147	$4,500	$30
Pointer PL	First Regional	Como		Gw	S	14		$90	$142	$142	$142	$4,500	$30
Lapidus Mem PL	First Regional	Crenshaw		Gw	S	18		$90	$142	$142	$142	$4,500	$30
Hernando PL	First Regional	Hernando	12	Mp	S	12		$90	$308	$152	$142	$4,500	$30
Dye PL	First Regional	Horn Lake		Mp	S	4		$90	$142	$142	$142	$4,500	$30
Chain PL	First Regional	Olive Branch		Mp	I	7	7	$90	$142	$142	$142	$4,500	$30
Lafayette Co/Oxfr	First Regional	Oxford		Tu	S			$90	$127	$127	$127	$4,500	$30
Sardis PL	First Regional	Sardis		Gw	S	9		$90	$142	$142	$142	$4,500	$30
Senatobia PL	First Regional	Senatobia		Gw	S	22		$90	$147	$147	$147	$4,500	$30
Davis Pub Lib	First Regional	Southaven		Mp	S	2		$90	$142	$142	$142	$4,500	$30
Irwin Library	First Regional	Tunica		Gw	S			$90	$127	$127	$127	$4,500	$30
Greenwood-LeFlr	Greenwood-Leflore	Greenwood	3	Gw	S			$90	$133	$127	$127	$4,500	$30

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Wilson Branch L	Greenwood-Leflore	Greenwood		Gw	S			$90	$127	$127	$127	$4,500	$30
Itta Bena Branch	Greenwood-Leflore	Itta Bena		Gw	S	9		$90	$142	$142	$142	$4,500	$30
Bay St. Louis-Han	Hancock County	Bay St. Louis	3	Gp	S			$90	$133	$127	$127	$4,500	$30
Kiln Library	Hancock County	Kiln		Gp	S			$90	$127	$127	$127	$4,500	$30
Waveland PL	Hancock County	Waveland		Gp	S			$90	$127	$127	$127	$4,500	$30
Person ML	Harriette Person	Port Gibson	1	Jk	S			$90	$129	$127	$127	$4,500	$30
Biloxi Main Lib	Harrison County	Biloxi		Gp	S			$90	$127	$127	$127	$4,500	$30
Division St Stu Ct	Harrison County	Biloxi		Gp	S			$90	$127	$127	$127	$4,500	$30
Sherry Mem Lib	Harrison County	Biloxi		Gp	S			$90	$127	$127	$127	$4,500	$30
W Biloxi PL	Harrison County	Biloxi		Gp	S			$90	$127	$127	$127	$4,500	$30
D'Iberville PL	Harrison County	D'Iberville		Gp	S			$90	$127	$127	$127	$4,500	$30
Gulfport PL	Harrison County	Gulfport	7	Gp	S			$90	$141	$127	$127	$4,500	$30
Orange Grove PL	Harrison County	Gulfport		Gp	S			$90	$127	$127	$127	$4,500	$30
Pass Christian PL	Harrison County	Pass Christian		Gp	S			$90	$127	$127	$127	$4,500	$30
Hattie,Petal&Forr	Hattie, Petal & Forr	Hattiesburg	3	Ha	S			$90	$133	$127	$127	$4,500	$30
Mail Library	Hattie, Petal & Forr	Hattiesburg		Ha	S			$90	$127	$127	$127	$4,500	$30
Petal Library	Hattie, Petal & Forr	Petal		Ha	S			$90	$127	$127	$127	$4,500	$30
VanCleave ML	Homochitto Valley	Centreville		Jk	S	44		$90	$147	$147	$147	$4,500	$30
Armstrong Lib	Homochitto Valley	Natchez	4	Jk	S	28		$90	$155	$147	$147	$4,500	$30
Woodville PL	Homochitto Valley	Woodville		Jk	S	55		$90	$157	$157	$157	$4,500	$30
Humphreys Cty L	Humphreys County	Belzoni	2	Gw	S			$90	$131	$127	$127	$4,500	$30
Isola PL	Humphreys County	Isola		Gw	I	6	5	$90	$142	$142	$142	$4,500	$30
St. Martin PL	Jackson-George	Biloxi		Gp	S			$90	$127	$127	$127	$4,500	$30
McIlwain PL	Jackson-George	Gautier		Gp	S			$90	$127	$127	$127	$4,500	$30
George Cty PL	Jackson-George	Lucedale		Ha	S			$90	$127	$127	$127	$4,500	$30
Moss Point City L	Jackson-George	Moss Point		Gp	S			$90	$127	$127	$127	$4,500	$30
Ocean Springs ML	Jackson-George	Ocean Springs		Gp	S			$90	$127	$127	$127	$4,500	$30
Pascagoula PL	Jackson-George	Pascagoula	8	Gp	S			$90	$143	$292	$127	$4,500	$30
East Central PL	Jackson-George	Pascagoula		Gp	S			$90	$127	$127	$127	$4,500	$30
Vancleave PL	Jackson-George	Vancleave		Gp	S			$90	$127	$127	$127	$4,500	$30
Jeffers Library	Jackson/Hinds	Bolton		Jk	S			$90	$127	$127	$127	$4,500	$30
Wood Library	Jackson/Hinds	Clinton		Jk	S			$90	$127	$127	$127	$4,500	$30
Edwards Lib	Jackson/Hinds	Edwards		Jk	S			$90	$127	$127	$127	$4,500	$30
Welty Library	Jackson/Hinds	Jackson	14	Jk	S			$90	$282	$127	$127	$4,500	$30
Brown Library	Jackson/Hinds	Jackson		Jk	S			$90	$127	$127	$127	$4,500	$30
Colonial Mart Lib	Jackson/Hinds	Jackson		Jk	S			$90	$127	$127	$127	$4,500	$30

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Hamer Library	Jackson/Hinds	Jackson		Jk	S			$90	$127	$127	$127	$4,500	$30
Alexander Lib	Jackson/Hinds	Jackson		Jk	S			$90	$127	$127	$127	$4,500	$30
Evers Blvd Br Lib	Jackson/Hinds	Jackson		Jk	S			$90	$127	$127	$127	$4,500	$30
Northside Lib	Jackson/Hinds	Jackson		Jk	S			$90	$127	$127	$127	$4,500	$30
S Hills Lib	Jackson/Hinds	Jackson		Jk	S			$90	$127	$127	$127	$4,500	$30
White Rock Lib	Jackson/Hinds	Jackson		Jk	S			$90	$127	$127	$127	$4,500	$30
Raymond Lib	Jackson/Hinds	Raymond		Jk	S			$90	$127	$127	$127	$4,500	$30
Austin Library	Jackson/Hinds	Terry		Jk	S			$90	$127	$127	$127	$4,500	$30
Majure Library	Jackson/Hinds	Utica		Jk	S			$90	$127	$127	$127	$4,500	$30
Chunky PL	Kemper-Newton	Chunky		Me	S			$90	$127	$127	$127	$4,500	$30
Decatur PL	Kemper-Newton	Decatur		Jk	I	9	3	$90	$142	$142	$142	$4,500	$30
DeKalb PL	Kemper-Newton	DeKalb		Me	S			$90	$127	$127	$127	$4,500	$30
Hickory PL	Kemper-Newton	Hickory		Tu	S			$90	$127	$127	$127	$4,500	$30
McMullan Lib	Kemper-Newton	Newton		Jk	S			$90	$127	$127	$127	$4,500	$30
Scooba PL	Kemper-Newton	Scooba		Me	S			$90	$127	$127	$127	$4,500	$30
Union PL	Kemper-Newton	Union	7	Jk	S			$90	$141	$127	$127	$4,500	$30
Ellisville PL	Laurel-Jones	Ellisville		Ha	S			$90	$127	$127	$127	$4,500	$30
Laurel-Jones Cty	Laurel-Jones	Laurel	4	Ha	S			$90	$135	$127	$127	$4,500	$30
L-J Dial-A-Book	Laurel-Jones	Laurel		Ha	S			$90	$127	$127	$127	$4,500	$30
Sandersville PL	Laurel-Jones	Sandersville		Ha	S			$90	$127	$127	$127	$4,500	$30
Itawamba Cty Pratt	Lee-Itawamba	Fulton		Tu	I	17	9	$90	$142	$142	$142	$4,500	$30
Lee County Lib	Lee-Itawamba	Tupelo	3	Tu	S			$90	$133	$127	$127	$4,500	$30
Lee-Itawamba Lib	Lee-Itawamba	Tupelo		Tu	S			$90	$127	$127	$127	$4,500	$30
Lincoln Cty PL	Lincoln-Lawr-Frankl	Brookhaven	5	Jk	S			$90	$137	$127	$127	$4,500	$30
Bude PL	Lincoln-Lawr-Frankl	Bude		Jk	I	27	15	$90	$147	$147	$147	$4,500	$30
Franklin Cty PL	Lincoln-Lawr-Frankl	Meadville		Jk	I	27	15	$90	$147	$147	$147	$4,500	$30
Lawrence Cty PL	Lincoln-Lawr-Frankl	Monticello		Jk	S			$90	$127	$127	$127	$4,500	$30
Newhebron PL	Lincoln-Lawr-Frankl	New Hebron		Jk	I	9	6	$90	$142	$142	$142	$4,500	$30
Long Beach PL	Long Beach	Long Beach	1	Gp	S			$90	$129	$127	$127	$4,500	$30
Artesia Br Lib	Lowndes County	Artesia		Me	I	10	7	$90	$142	$142	$142	$4,500	$30
Caledonia Br Lib	Lowndes County	Caledonia		Tu	S			$90	$127	$127	$127	$4,500	$30
Columbus PL	Lowndes County	Columbus	4	Tu	S			$90	$135	$127	$127	$4,500	$30
Crawford Br Lib	Lowndes County	Crawford		Tu	I	10	7	$90	$142	$142	$142	$4,500	$30
Mad Cty-Canton	Madison County	Canton	4	Jk	S			$90	$135	$127	$127	$4,500	$30
Flora PL	Madison County	Flora		Jk	S			$90	$127	$127	$127	$4,500	$30
Madison PL	Madison County	Madison		Jk	S			$90	$127	$127	$127	$4,500	$30

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Jurgens Mem Lib	Madison County	Ridgeland		Jk	S			$90	$127	$127	$127	$4,500	$30
Lambert PL	Marks-Quitman Cty	Lambert		Gw	S			$90	$127	$127	$127	$4,500	$30
Marks-Quitman	Marks-Quitman Cty	Marks	3	Gw	S	12		$90	$148	$142	$142	$4,500	$30
Sledge PL	Marks-Quitman Cty	Sledge		Gw	S			$90	$127	$127	$127	$4,500	$30
French Library	Marshall County	Byhalia		Mp	I	13	6	$90	$142	$142	$142	$4,500	$30
Marshall Cty Lib	Marshall County	Holly Springs	3	Tu	S			$90	$133	$127	$127	$4,500	$30
Potts Camp Lib	Marshall County	Potts Camp		Tu	S			$90	$127	$127	$127	$4,500	$30
Meridian-Laud Cty	Meridan-Lauderdale	Meridian	2	Me	S			$90	$131	$127	$127	$4,500	$30
Mailibrary	Meridan-Lauderdale	Meridian		Me	S			$90	$127	$127	$127	$4,500	$30
Carthage-Leake Cty	Mid-Mississippi	Carthage		Jk	S			$90	$127	$127	$127	$4,500	$30
Duck Hill PL	Mid-Mississippi	Duck Hill		Gw	S			$90	$127	$127	$127	$4,500	$30
Durant PL	Mid-Mississippi	Durant		Jk	S			$90	$127	$127	$127	$4,500	$30
Goodman PL	Mid-Mississippi	Goodman		Jk	S			$90	$127	$127	$127	$4,500	$30
Kilmichael PL	Mid-Mississippi	Kilmichael		Gw	S			$90	$127	$127	$127	$4,500	$30
Attala County Lib	Mid-Mississippi	Kosciusko	13	Jk	S			$90	$280	$127	$127	$4,500	$30
Lexington PL	Mid-Mississippi	Lexington		Jk	S			$90	$127	$127	$127	$4,500	$30
Winston County	Mid-Mississippi	Louisville		Jk	S			$90	$127	$127	$127	$4,500	$30
Pickens PL	Mid-Mississippi	Pickens		Jk	S			$90	$127	$127	$127	$4,500	$30
Tchula PL	Mid-Mississippi	Tchula		Jk	S			$90	$127	$127	$127	$4,500	$30
Walnut Grove PL	Mid-Mississippi	Walnut Grove		Tu	S			$90	$127	$127	$127	$4,500	$30
West PL	Mid-Mississippi	West		Gw	S			$90	$127	$127	$127	$4,500	$30
Winona-Montgom	Mid-Mississippi	Winona		Gw	S			$90	$127	$127	$127	$4,500	$30
Neshoba County	Neshoba County	Philadelphia	1	Me	S			$90	$129	$127	$127	$4,500	$30
Cox Library	Northeast Regional	Baldwyn		Tu	S			$90	$127	$127	$127	$4,500	$30
Belmont PL	Northeast Regional	Belmont		Tu	S			$90	$127	$127	$127	$4,500	$30
Blue Mountain PL	Northeast Regional	Blue Mountain		Tu	S			$90	$127	$127	$127	$4,500	$30
Allen Library	Northeast Regional	Booneville		Tu	S			$90	$127	$127	$127	$4,500	$30
Burnsville PL	Northeast Regional	Burnsville		Tu	S			$90	$127	$127	$127	$4,500	$30
Corinth PL	Northeast Regional	Corinth	13	Tu	S			$90	$280	$632	$127	$4,500	$30
Iuka PL	Northeast Regional	Iuka		Tu	S			$90	$127	$127	$127	$4,500	$30
Marietta PL	Northeast Regional	Marietta		Tu	S			$90	$127	$127	$127	$4,500	$30
Rienzi PL	Northeast Regional	Rienzi		Tu	I	8	6	$90	$142	$142	$142	$4,500	$30
Ripley PL	Northeast Regional	Ripley		Tu	S			$90	$127	$127	$127	$4,500	$30
McRae Mem Lib	Northeast Regional	Tishomingo		Tu	I	9	7	$90	$142	$142	$142	$4,500	$30
Chalybeate PL	Northeast Regional	Walnut		Tu	S			$90	$127	$127	$127	$4,500	$30
Walnut PL	Northeast Regional	Walnut		Tu	S			$90	$127	$127	$127	$4,500	$30

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Library	System	City	# Of Loc.	FRelay Node	SB/ IND	SB Mile	Ind Mile	Network (Note 2				Equip (Opt 1/2/3)	
								Opt 1/2/3 Installation. (Note 1)	Option 1 Recur.	Option 2 Recur.	Option 3 Recur.	Opt 1/2/3 Purchase (Notes 1 and 3)	Opt 1/2/3 Maint.
Brooksville PL	Noxubee County	Brooksville		Me	S			$90	$127	$127	$127	$4,500	$30
Fant Mem Lib	Noxubee County	Macon	3	Me	S	9		$90	$148	$142	$142	$4,500	$30
Danial Mem Lib	Noxubee County	Shuqualak		Me	S			$90	$127	$127	$127	$4,500	$30
Maben PL	Oktibbeha County	Maben		Tu	S			$90	$127	$127	$127	$4,500	$30
Starkville PL	Oktibbeha County .	Starkville	3	Tu	S			$90	$133	$127	$127	$4,500	$30
Sturgis PL	Oktibbeha County	Sturgis		Tu	S			$90	$127	$127	$127	$4,500	$30
Crosby Mem Lib	Pearl River	Picayune	2	Ha	S	24		$90	$151	$147	$147	$4,500	$30
Poplarville PL	Pearl River	Poplarville		Ha	S			$90	$127	$127	$127	$4,500	$30
Crosby PL	Pike-Amite-Walthall	Crosby		Jk	I	38	18	$90	$147	$147	$147	$4,500	$30
Gloster PL	Pike-Amite-Walthall	Gloster		Jk	S	38		$90	$147	$147	$147	$4,500	$30
Liberty PL	Pike-Amite-Walthall	Liberty		Jk	S	29		$90	$147	$147	$147	$4,500	$30
Magnolia PL	Pike-Amite-Walthall	Magnolia		Ha	S	20		$90	$142	$142	$142	$4,500	$30
McComb PL	Pike-Amite-Walthall	McComb	9	Jk	S	14		$90	$160	$142	$142	$4,500	$30
Alpha Center Lib	Pike-Amite-Walthall	McComb		Jk	S	14		$90	$142	$142	$142	$4,500	$30
Progress PL	Pike-Amite-Walthall	McComb		Jk	S	14		$90	$142	$142	$142	$4,500	$30
Osyka PL	Pike-Amite-Walthall	Osyka		Ha	S	22		$90	$147	$147	$147	$4,500	$30
Walthall County	Pike-Amite-Walthall	Tylertown		Ha	S			$90	$127	$127	$127	$4,500	$30
Powell Mem Lib	Pine Forest	Beaumont		Ha	S			$90	$127	$127	$127	$4,500	$30
Blackwell Mem Lib	Pine Forest	Collins		Ha	S			$90	$127	$127	$127	$4,500	$30
Leakesville PL	Pine Forest	Leakesville		Ha	I	17	10	$90	$142	$142	$142	$4,500	$30
Lumberton PL	Pine Forest	Lumberton		Ha	S			$90	$127	$127	$127	$4,500	$30
McHenry PL	Pine Forest	McHenry		Ha	S			$90	$127	$127	$127	$4,500	$30
McLain PL	Pine Forest	McLain		Ha	S			$90	$127	$127	$127	$4,500	$30
Brewer Mem Lib	Pine Forest	Mt. Olive		Ha	S			$90	$127	$127	$127	$4,500	$30
New Augusta PL	Pine Forest	New Augusta		Ha	I	8	5	$90	$142	$142	$142	$4,500	$30
Hall Library	Pine Forest	Petal		Ha	S			$90	$127	$127	$127	$4,500	$30
Purvis PL	Pine Forest	Purvis		Ha	S			$90	$127	$127	$127	$4,500	$30
Richton PL	Pine Forest	Richton	15	Ha	S			$90	$284	$594	$127	$4,500	$30
Seminary PL	Pine Forest	Seminary		Ha	S			$90	$127	$127	$127	$4,500	$30
State Line PL	Pine Forest	State Line		Ha	I	9	4	$90	$142	$142	$142	$4,500	$30
Boyer Mem Lib	Pine Forest	Sumrall		Ha	S			$90	$127	$127	$127	$4,500	$30
Stone County Lib	Pine Forest	Wiggins		Ha	S			$90	$127	$127	$127	$4,500	$30
Sharkey-Issaquena	South Delta	Rolling Fork		Jk	S			$90	$127	$127	$127	$4,500	$30
Ricks Mem Lib	South Delta	Yazoo City	2	Jk	S			$90	$131	$127	$127	$4,500	$30
Bassfield PL	South MS Regional	Bassfield		Ha	I	13	5	$90	$142	$142	$142	$4,500	$30
Columbia-Marion	South MS Regional	Columbia	3	Ha	S			$90	$133	$127	$127	$4,500	$30

Library	System	City	# Of Loc.	FRelay Node	SB/ IND	SB Mile	Ind Mile	Network (Note 2				Equip (Opt 1/2/3)	
								Opt 1/2/3 Installation. (Note 1)	Option 1 Recur.	Option 2 Recur.	Option 3 Recur.	Opt 1/2/3 Purchase	Opt 1/2/3 Maint. (Notes 1 and 3)
Prentiss PL	South MS Regional	Prentiss		Jk	I	9	5	$90	$142	$142	$142	$4,500	$30
Drew PL	Sunflower County	Drew		Gw	S			$90	$127	$127	$127	$4,500	$30
Seymour Library	Sunflower County	Indianola	7	Gw	S			$90	$141	$127	$127	$4,500	$30
Inverness PL	Sunflower County	Inverness		Gw	S			$90	$127	$127	$127	$4,500	$30
Sheriff Library	Sunflower County	Moorhead		Gw	S			$90	$127	$127	$127	$4,500	$30
Penitentiary Lib	Sunflower County	Parchman		Gw	S			$90	$127	$127	$127	$4,500	$30
Stansel Library	Sunflower County	Ruleville		Gw	S			$90	$127	$127	$127	$4,500	$30
Sunflower PL	Sunflower County	Sunflower		Gw	I	7	3	$90	$142	$142	$142	$4,500	$30
Charleston Lib	Tallahatchie Cty	Charleston	4	Gw	S			$90	$135	$127	$127	$4,500	$30
Sumner Library	Tallahatchie Cty	Sumner		Gw	S			$90	$127	$127	$127	$4,500	$30
Tutwiler Branch L	Tallahatchie Cty	Tutwiler		Gw	S			$90	$127	$127	$127	$4,500	$30
Webb Library	Tallahatchie Cty	Webb		Gw	S			$90	$127	$127	$127	$4,500	$30
Evans Mem Lib	Tombigee Regional	Aberdeen		Tu	S			$90	$127	$127	$127	$4,500	$30
Wren PL	Tombigee Regional	Aberdeen		Tu	S			$90	$127	$127	$127	$4,500	$30
Choctaw Cty PL	Tombigee Regional	Ackerman		Tu	I	8	2	$90	$142	$142	$142	$4,500	$30
Amory Municipal	Tombigee Regional	Amory		Tu	S			$90	$127	$127	$127	$4,500	$30
Webster County	Tombigee Regional	Eupora		Tu	S			$90	$127	$127	$127	$4,500	$30
Hamilton PL	Tombigee Regional	Hamilton		Tu	S			$90	$127	$127	$127	$4,500	$30
Mathiston PL	Tombigee Regional	Mathiston		Tu	S			$90	$127	$127	$127	$4,500	$30
Lowe PL	Tombigee Regional	Nettleton		Tu	S			$90	$127	$127	$127	$4,500	$30
Weir PL	Tombigee Regional	Weir		Tu	S			$90	$127	$127	$127	$4,500	$30
Bryan PL	Tombigee Regional	West Point	11	Tu	S			$90	$276	$127	$127	$4,500	$30
Mail-A-Book	Tombigee Regional	West Point		Tu	S			$90	$127	$127	$127	$4,500	$30
Blue Springs Lib	Union County	Blue Springs		Tu	S			$90	$127	$127	$127	$4,500	$30
Nance-McNeely L	Union County	Myrtle		Tu	I	8	6	$90	$142	$142	$142	$4,500	$30
Smith Library	Union County	New Albany	3	Tu	S			$90	$133	$127	$127	$4,500	$30
Warren Cty-Vicksb	Warren Cty-Vicksbg	Vicksburg	1	Jk	S			$90	$129	$127	$127	$4,500	$30
Arcola Library	Washington Cty	Arcola		Gw	S			$90	$127	$127	$127	$4,500	$30
Avon Library	Washington Cty	Avon		Gw	S			$90	$127	$127	$127	$4,500	$30
Glen Allan Lib	Washington Cty	Glen Allen		Jk	I	12	7	$90	$142	$142	$142	$4,500	$30
Percy Mem Lib	Washington Cty	Greenville	6	Gw	S			$90	$139	$127	$127	$4,500	$30
Torrey Wood Mem	Washington Cty	Hollandale		Gw	S			$90	$127	$127	$127	$4,500	$30
Leland Library	Washington Cty	Leland		Gw	S			$90	$127	$127	$127	$4,500	$30
Coffeeville PL	Yalobusha Cty	Coffeeville	2	Tu	S	13		$90	$146	$142	$142	$4,500	$30
Oakland PL	Yalobusha Cty	Oakland		Gw	S			$90	$127	$127	$127	$4,500	$30

								Network (Note 2				Equip (Opt 1/2/3)	
Library	System	City	# Of Loc.	FRelay Node	SB/ IND	SB Mile	Ind Mile	Opt 1/2/3 Installation. (Note 1)	Option 1 Recur.	Option 2 Recur.	Option 3 Recur.	Opt 1/2/3 Purchase (Notes 1 and 3)	Opt 1/2/3 Maint.
Sub-Total								$22,500	$34,174	$34,995	$32,645	$1,125,000	$7,500
Mississippi Library Commision								$200	$1,152	$1,072	$1,408		
Total								$22,700	$35,326	$36,067	$34,053	$14,500	$870

Note(s)

1. Add following additional cost to he Totals above..	Network Installation	Network Recur.	Equipment Purchase	Equipment Maint.
a. Option 1: 8 Hq with 2 - 56 kbps access circuits	$720	$0	$8,000	$40
b. Option 2: 3 T1's and 2 location w/2 - 56 kbps circuits	$210	$0	$26,000	$175
c. Option 3: No additional cost.	$0	$0	$0	$0

2. Cost (Installation and Recurring) cost for Independent Company mileage is not included. Use estimate $500 for inst. and $125 plus $1.50/mile for recurring monthly cost.

3. Purchase and Maintenence (monthly) cost of network equipment is an estimate.

4. Inter-LATA cost (Installation and Recurring) is not included and needs to be added.

Inter-cloud Network Cost	Capacity	Network Installation.	Network Recur.
Tupelo to Jackson	1 - T1	$200	$833
Tupelo to Greenwood	1 - T1	$200	$783
Tupelo to Meridian	2 - 56 kbps	$90	$270
Tupelo to Hattiesburg	1 - T1	$200	$783
Tupelo to Memphis (See Note 4)	1 - 56 kbps	$180	$135
Tupelo to Gulfport (See Note 4)	3 - 56 kbps	$270	$405
Sub-Total		$1,140	$3,209

56 kbps FRelay access 0 miles

								Network (Note 2				Equip (Opt 1/2/3)	
Library	System	City	# Of Loc.	FRelay Node	SB/ IND	SB Mile	Ind Mile	Opt 1/2/3 Installation. (Note 1)	Option 1 Recur.	Option 2 Recur.	Option 3 Recur.	Opt 1/2/3 Purchase	Opt 1/2/3 Maint. (Notes 1 and 3)
56 kbps FRelay access upto 20 miles		142											
56 kbps FRelay access upto 50 miles		147											
56 kbps FRelay access upto 75 miles		157											
Per additional PVC		2											
T1 FRelay access 0 miles		526											
56 kbps CSU/DSU w/inst.		1000											
T1 CSU/DSU w/inst.		2000											
Cisco 2500 w/inst.		3500											
Cisco 4000 w/inst.		10500											
CSU/DSU 56 maintencne (monthly)		5											
CSU/DSU T1 maintencne (monthly)		10											
Smartnet cisco 2500 (monthly)		25											
Smartnet cisco 4000 (monthly)		75											

Mississippi Library Commission
CD ROM Tower Specifications

Section 7: Functional Specifications

A: General Description

The MLC desires to purchase a CD-ROM tower which will house and allow access to its collection of CD-ROM databases. The purpose of the tower is to facilitate the use of these databases by MLC employees (through in-house Local Area Networks) and by member libraries throughout the state (through the planned statewide telecommunications network). The tower will be part of both MLC's Novell LANs and the statewide network. The statewide network will operate under TCP/IP and several routers and servers.

It is anticipated that this CD-ROM tower will include a dedicated computer and specialized software to facilitate the access to the CD-ROM discs. Proprietary software for accessing an individual disc will be loaded onto network servers for general use; the client (workstation) software will be standard access software such as a web browser or Novell client programs.

B. Minimum Requirements

The chosen CD-ROM tower unit must conform to the following minimum specifications:

1) The tower must be capable of holding and providing on-line access to a minimum of 50 discs, with access to all 50 possible **without** any physical loading of the disc after access is requested by the user - that is, the unit should **not** be a "jukebox". The unit must allow at least 15 simultaneous accesses to any of the discs. A higher number of simultaneous uses is desirable.

2) The CD-ROM unit must support TCP/IP protocol (i.e. it must be "routable").

3) The unit must include a security system that integrates with Novell directory services or provides equivalent protection to control access to each disc.

C. Upgrade Requirements

1) It is desirable that the tower be expandable to a future capacity of 100 discs through the addition of drive bays or expansion units.

Attachment 5

D. Options

1) It is desirable that the tower be expandable to a future capacity of 100 discs through the addition of drive bays or expansion units.

2) The capacity for more than 15 simultaneous accesses (as specified in Section B, item 1, is desired.

3) It is highly desirable that the tower's security include the ability to restrict individual disc access to a list of given user IDs or IP addresses. This is necessary because some discs have limited licensing and will be made available only to MLC staff; other discs will be made available to users of the statewide telecommunications network.

4) It is highly desirable that the unit's software have the ability to allow web-browser access to proprietary database formats such as Bowker/Reed, EBSCO, and Baker & Taylor.

E. Maintenance

Maintenance must be provided on-site at MLC's offices. Wherever possible, maintenance must be done without removing the entire unit from active service. If a failed unit cannot be restored to service within 8 (eight) hours, or requires service that results in the unit being removed from MLC premises, the vendor must furnish and install a replacement unit for use by MLC.

F. Other Information

G. Selection Criteria

In addition to price and to conformance to the above required and desired functional specifications, prime consideration must be given towards the unit's **reliability** and the frequency of needed preventative maintenance. Also, the ability to allow web browser access to proprietary disc formats (see section D #4 above) is highly desired.

Section 8: Brand-Specific Requirements

There are no brand-specific requirements for this unit. Among the companies known to sell units such as described in this procurement are:

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Mississippi Library Commission
CD ROM Tower Specifications

ProCom Technologies
2181 DuPont Drive
Irvine, CA 92715
800-800-8600

SciNet
3255-2 Scott Blvd, Suite 102
Santa Clara, CA 95054
800-653-1010

Ornetix Network Products
1885 Lundy Avenue, Suite 200
San Jose, CA 95131

Attachment 5